HEALTHCARE
Imaging Services

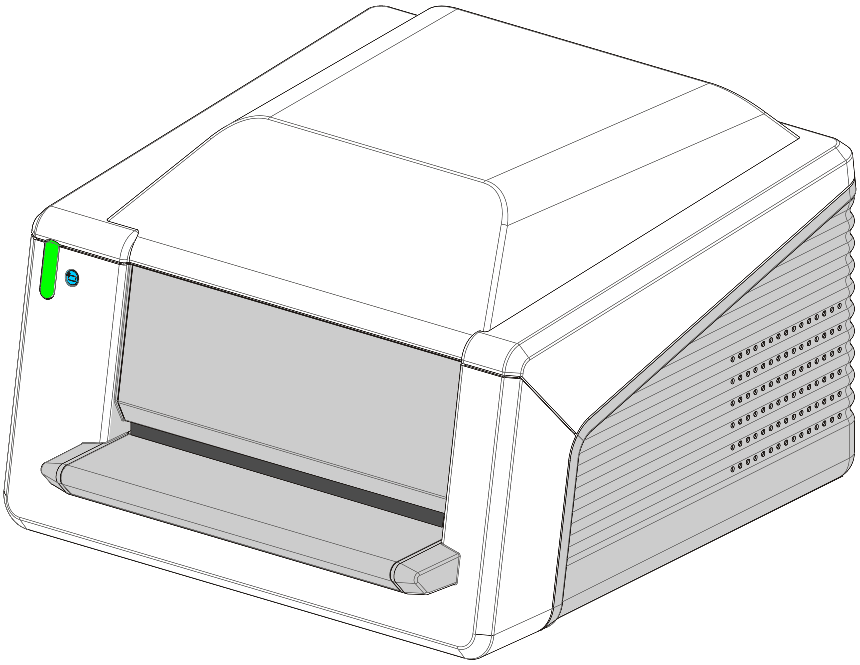
Service Manual

Document No: DD+DIS150.06E

CR 30-X

Type 5175/100/105/110/120/125

1st Edition *



* For the revision status per chapter please refer to the latest version of the order list in the GSO Library.

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

► Purpose of this Document

This document provides information on the structure and contents of the Service Manual.

► Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.0
1.3	11-2010	Added digitizer subtypes 105, 120, and 125.

► Chapter Overview

Chapter

0 Order List
0 Generic Safety Directions
1 Controls, Connections and Set Up Procedures
2 Functional Description
3 Repair and Service
  3.1 Machine specific Safety and Repair Information
  3.2 Machine specific Tools, Software Tools and Auxiliary Equipment
  3.3 Troubleshooting
  3.4 Electrical and Mechanical Codes, Fuses, LEDs
  3.5 Replacement of Parts
  3.6 Adjustments and Calibrations
  3.7 Software Menus and Setting
  3.8 Software Releases, Patches
4 Reference and Circuit Diagrams
5 Spare Parts List
6 Accessories
7 Field Modifications
8 Manufacturing Standard Modifications
9 Maintenance
10 Service Bulletins
11 Installation Planning
12 Glossary

► Explanation of Notes

Safety relevant Notes		
Icon	**Signal Word**	**Situation**
❗	**CAUTION:**	Possible dangerous situation: Light injuries or damage to the equipment described in the manual and/or damage to any other equipment or goods and/or environmental pollution can be the consequence.
⚠	**WARNING:**	Dangerous situation: Potential serious injury to a user, engineer, patient or any other person and possible mistreatment of patients can be the consequence.
⚠	**DANGER:**	Direct, immediate danger: Death or serious injuries can be the consequence.

Not-safety relevant Notes		
Icon	**Name**	**Type of Information**
📖	INSTRUCTION:	Indicates an instruction where it is important to follow literally the described actions.
🔍	IMPORTANT:	Highlights very important actions which have to be carried out to prevent malfunction.
✓	NOTE:	• Indicates advice to facilitate the following step or action without having a direct influence on the step or action. • Highlights unusual points. • Indicates background information. • Can be used to explain or highlight displays of the graphical user interface.

► Conventions

Highlighting of Tasks		
Task number	**Task Description**	**Remark**
(1)	Connect the cable.	Examples for working steps to be performed in the listed sequence.
(2)	Switch the machine on.	

Highlighting of Buttons, Functions and Names within a Task		
(1)	Press **`<F9>`** or double-click the **`<Refresh>`** button.	Examples are: Menu topics, keyboard keys, icons, device buttons, commands etc.
(2)	Enter **`file name`**.	In this example a file name has to be entered as term.

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1 About this Manual

This manual is the Service Manual for the digitizer type 5175,
with subtypes 100, 105, 110, 120 and 125.

Name of the digitizer:

- Subtypes 100, 105: CR 30-X
- Subtypes 110, 120, 125: Digitizer (ex factory no name on the covers)

All of the above mentioned subtypes are called "digitizer" in this document.

The functional differences between the different subtypes are described in the CR 30-X Installation Planning Document, DD+DIS172.06E.

The digitizer is part of a system comprising following components:

- Digitizer
- NX Workstation (Tower or laptop version)
- Cassette with Image Plate (IP)

Optional Components (not displayed)

- Printer (e.g. Drystar 5302)
- Additional Cassettes
- Uninterruptible Power Supply (UPS)

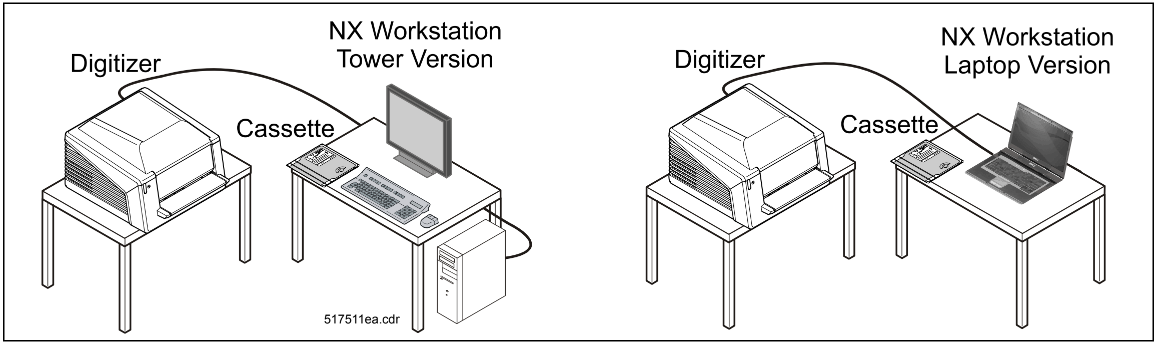
Digitizer
NX Workstation
Tower Version
Cassette
517511ea.cdr
Digitizer
NX Workstation
Laptop Version
Cassette

Figure 1

NOTE:

This manual covers the digitizer with cassettes and image plates.
For more information to the other system components (NX Workstation, printer) refer to MedNet, GSO Library.

Document No: DD+DIS238.06E

Generic Safety Directions
for HealthCare Imaging Products

► Purpose of this Document

This Generic Safety Directions document comprises the general safety relevant information including relevant environmental and occupational safety instructions for the Service Engineer.

It is valid for all Agfa HealthCare Imaging Products and part of each Service Documentation as well as Installation Planning document.
The latest version is available via MedNet, GSO Library path:
General Info => Agfa HealthCare => Publications => Service Manual

► Document History

Edition. Revision	Release Date	Changes compared to previous Revision 1.2:
1.3	07-2009	• Updated table with laser classification to latest changes of the corresponding standard. See section 3.3. • Added section Environmental and occupational Safety Instructions. See section 9. • Added safety note concerning inroom installations of CR equipment and corresponding X-ray shielding. See section 17. • Added laser safety note and safety note concerning electrical checks after repairs. See section 19. • Added treatment for Lithium batteries in sections 19 and 21. • Updated information concerning the recycling pass. See section 24.

► Referenced Documents

Document	Title
Not applicable	Not applicable

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► Manufacturer

Agfa HealthCare N.V.

Publisher

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

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1 Disclaimer

The installation and service of equipment described herein is to be performed by qualified personnel who are employed by Agfa HealthCare or one of its affiliates or who are otherwise authorized by Agfa HealthCare or one of its affiliates to provide such services.

Fitters, engineers and other persons who are not employed by or otherwise directly affiliated with or authorized by Agfa HealthCare or one of its affiliates are directed to contact one of the local offices of Agfa HealthCare or one of its affiliates before attempting installation or service procedures.

No part of this document may be reproduced, copied, adapted or transmitted in any form or by any means without the written permission of Agfa HealthCare.

Agfa HealthCare makes no warranties or representation, expressed or implied, with respect to the accuracy, completeness or usefulness of the information contained in this document and specifically disclaims warranties of suitability for any particular purpose.

Agfa HealthCare shall under no circumstances be liable for any damage arising from the use or inability to use any information, apparatus, method or process disclosed in this document.

Agfa HealthCare is not liable for resulting consequences, damages or injuries if you don’t operate the product correctly or if you don’t have it serviced correctly.

Agfa HealthCare reserves the right to change the product, the characteristics and its documentation without further notice to improve reliability, function or design.

✓ NOTE:

In the United States, Federal Law stipulates that medical devices should only be sold to, distributed and used by or by order of a licensed physician.

2 Used Icons

Icon	Name and Circumstances
❗	CAUTION: Possible dangerous situation: Light injuries or damage to the equipment described in the manual and/or damage to any other equipment or goods and/or environmental pollution can be the consequence.
⚠	WARNING: Dangerous situation: Potential serious injury to a user, engineer, patient or any other person and possible mistreatment of patients can be the consequence.
⚠	DANGER: Direct, immediate danger: Death or heavy injuries can be the consequence.
📖	INSTRUCTION: If used in combination with the warning or caution sign: Indicates a specific instruction, which if followed exactly, avoids the subject of the warning or caution. If used without warning or caution sign: Indicates an instruction where it is important to follow literally as described.
🔍	IMPORTANT: Highlights very important actions which have to be carried out to prevent malfunction.
✓	NOTE: Indicates advice to facilitate the following step or action. Highlights unusual points. Indicates background information. Can be used to explain or highlight displays of the graphical user interface. Is additional information without influence on the action or step!

3 Labels

3.1 CE Mark

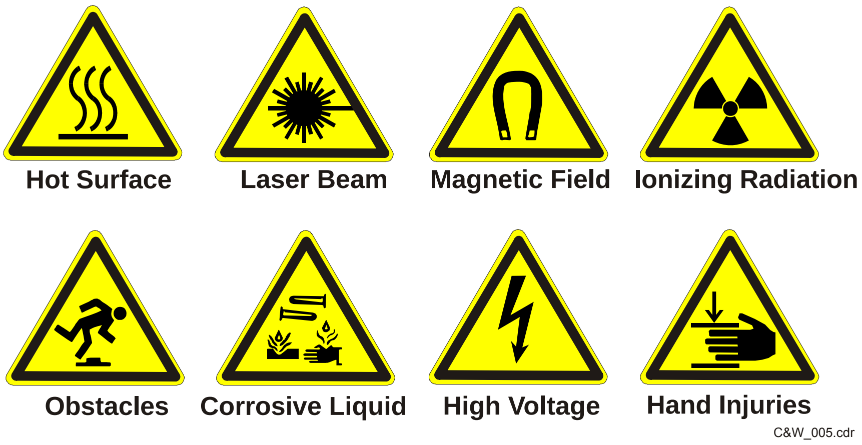
CE Mark CE	This product carries the CE Mark. The CE Declaration (CE Conformity) becomes invalid if the product is changed without explicit consent of the manufacturer! This applies to all parts, not only to safety elements.

3.2 System Labels

All system labels and software version number locations are referred to within this service document in the appropriate section.

Enclosed an overview of common labels, according to ISO 3864.

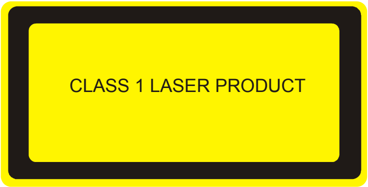
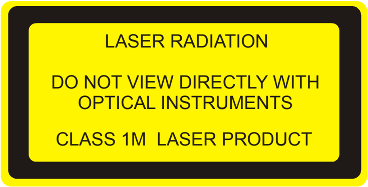
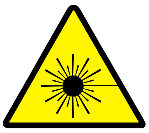
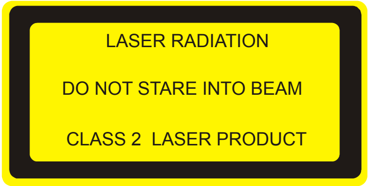
This list is not complete.

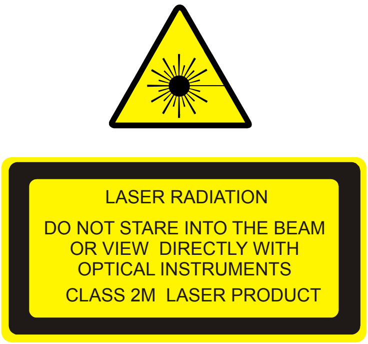
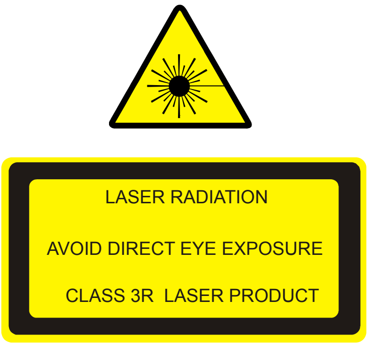
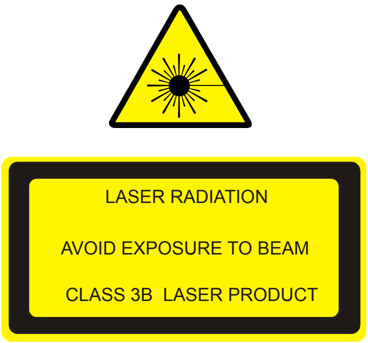
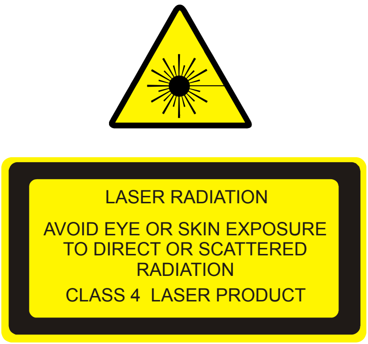

Hot Surface
Laser Beam
Magnetic Field
Ionizing Radiation
Obstacles
Corrosive Liquid
High Voltage
Hand Injuries
C&W_005.cdr

3.3 System Labels concerning Laser Radiation

According to its classification, laser radiation can lead to eye and skin injuries. Each laser source is classified from class 1 to class 4, based on standard DIN EN 60825-1:2007.

The table below lists the meaning of the different laser classes. Note the detailed instructions in the user manual and technical documentation.

Class #	**Meaning**	**Example Label**
Class 1:	Not dangerous to the human eye, even when using optical instruments. Can nevertheless produce irritating effects, especially with low ambient light conditions.	 CLASS 1 LASER PRODUCT
Class 1 M:	Not dangerous to the human eye if no optical instruments (magnifying glass or binocular) are used. Can nevertheless produce irritating effects, especially with low ambient light conditions.	 LASER RADIATION DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS CLASS 1M LASER PRODUCT
Class 2:	Dangerous to the human eye for intentional staring into the beam. Not dangerous for short term exposure < 0,25 seconds. Using optical instruments does not increase the risk of eye injury. Can even for short term exposure < 0,25 seconds produce dazzling and irritating effects, especially with low ambient light conditions.	  LASER RADIATION DO NOT STARE INTO BEAM CLASS 2 LASER PRODUCT

Class #	**Meaning**	**Example Label**
Class 2M:	Dangerous to the human eye when staring into the beam or when using optical instruments (magnifying glass or telescope). No hazard for short term exposure < 0,25 seconds (aversion response of the eye) without use of optical instruments. Can produce dazzling and irritating effects even for short term exposure < 0,25 seconds, especially at low ambient light conditions.	 LASER RADIATION DO NOT STARE INTO THE BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS CLASS 2M LASER PRODUCT
Class 3R:	Possibly dangerous to the human eye for direct view into the beam. Risks of an eye injury is increasing with duration of exposure. Can produce dazzling and irritating effects, especially with low ambient light conditions.	 LASER RADIATION AVOID DIRECT EYE EXPOSURE CLASS 3R LASER PRODUCT
Class 3B:	Normally dangerous to the human eye for direct view into the beam. Viewing diffuse reflections is normally not dangerous. Risk of small skin injuries or ignition of explosive material if the power of the laser beam is close to the upper limits of class 3 B.	 LASER RADIATION AVOID EXPOSURE TO BEAM CLASS 3B LASER PRODUCT
Class 4:	Dangerous to the human eye for direct view into the beam or viewing diffuse reflections. Very often class 4 lasers also implicate a fire hazard.	 LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION CLASS 4 LASER PRODUCT

4 Product Complaints

Any service person who has any complaints or has experienced any dissatisfaction in the quality, durability, reliability, safety, effectiveness or performance of this product must notify Agfa HealthCare by the Agfa HealthCare complaint procedure.

If the product malfunctions and may have caused or contributed to a serious injury of a patient or an accident or if there are any hazards which may cause an accident Agfa HealthCare must be notified immediately by telephone, fax or written correspondence to the following address:

Agfa Service Support - local support addresses and phone numbers listed on:

www.agfa.com

Agfa – Gevaert N.V.
Septestraat 27
2640 Mortsel, Belgium.
Fax +32 3 444 4485

5 References

Technical Documentation is available via MedNet (PDF) and your local Agfa HealthCare support organisation (Paper).

Access to MedNet:

IntraNet: http://docs.agfanet/bu/mi/mednet/mednetcso.nsf
ExtraNet: http://extranet.agfa.com/bu/mi/mednet/mednetcso.nsf

6 Intended Use

This Agfa HealthCare product should only be operated in a hospital or clinical radiological environment by qualified staff.

It must only be operated according to its specifications and its intended use. Any operation not corresponding to the specifications or intended use may result in hazards, which in turn may lead to serious injuries or fatal accidents (for example electric shocks). AGFA will not assume any liability whatsoever in these cases.

Make sure that the product is constantly monitored in order to avoid inappropriate handling, especially by children.

The product must only be installed and put into operation under the specified conditions.

7 Intended User

This manual is written for Agfa trained Field Service Engineers and Clinical Application Specialists, trained users of Agfa HealthCare products and trained diagnostic X–Ray clinical personnel who have received proper training. Users are considered as the persons who handle the equipment as well as the persons having authority over the equipment.

8 Qualifications for Operation and Service Tasks

This Technical Documentation describes adjustments and routines which must only to be performed by qualified technical personnel.

The Agfa (trained) Field Service Engineers and Clinical Application Specialists must have received adequate Agfa HealthCare training on the safe and effective use of the product and applicable environmental and occupational safety matters before attempting to work with it. Training requirements may vary from country to country.

Agfa (trained) Field Service Engineers and Clinical Application Specialists must make sure that training is received in accordance with local laws or regulations that have the force of law.

Your local Agfa HealthCare representative can provide further information on training.

9 Environmental and occupational Safety Instructions

Each Agfa (trained) Field Service Engineer and Clinical Application Specialist:

- Must make his or her personal contribution to improve safety and protect the environment.
- When working on a customers site, has a duty to take reasonable care to avoid injury to himself or herself or to others who may be affected by their acts or omissions.
- Is obligated to adhere strictly to regulations and instructions.
- Shall familiarise himself or herself with the provisions of the Agfa Healthcare Health, Safety and Environment Policy and any specific rules or procedures relating to occupational safety at work and the protection of the environment.
- Shall promptly report any near misses, accidents, incidents or dangerous occurrences to their line manager and co-operate fully in any investigation.
- Shall co-operate with company management on matters relating to health, safety and environment and, where appropriate, discuss with and / or assist their manager in resolving matters relating to health, safety and environment.
- Shall ensure that any company equipment issued to them, or, for which they are responsible, is correctly used and properly maintained.
- Shall wear protective equipment whenever instructed or if it is recommended to do so.
- Shall be responsible for good housekeeping in the area in which he or she is working.
- Shall report situations, which could put them at risk, on either company or customers' premises, to their manager or supervisor; and, if warranted, directly and in confidence, to the Health and Safety Co-ordinator, Global HSE Manager, or ultimately to the Managing Director.
- Shall report any injuries, diseases or dangerous occurrences to his or her line manager.
- Shall report any accidents, incidents or near misses to his or her line manager.
- Shall report any situation of which he or she is aware that is potentially dangerous.
- Shall comply with any health surveillance procedure instituted for his or her benefit or for compliance with regulations.

10 Connections to other Equipment

Agfa HealthCare equipment must only be used in combination with other Agfa HealthCare equipment or components if these are expressly recognized by Agfa HealthCare as compatible. A list of such equipment and components is available from Agfa HealthCare service on request.

Changes or additions to the equipment must only be carried out by persons authorized to do so by Agfa HealthCare. Such changes must comply with best engineering practice and all applicable laws and regulations that have the force of law within the jurisdiction of the hospital.

The Agfa HealthCare products are designed to communicate with other devices in the hospital network using DICOM protocols.

Connections to other equipment:

Warning:

Accessory equipment not complying with the safety requirements of this product may lead to a safety hazard.

INSTRUCTION:

Consult the Technical Documentation before making any connections to other equipment.

Consideration relating to the choice of accessory equipment shall include:

- Use of the accessory equipment in the patient vicinity.
- Evidence that the safety certification of the accessory equipment has been performed in accordance with the appropriate IEC 60601-1 and IEC 60601-1-1 harmonized national standard.

In addition all configurations must comply with the medical electrical systems standard IEC 60601-1-1. The party that makes the connections acts as system Configurer and is responsible for complying with the systems standard.

If required, contact your local service organization.

11 Accessories and Spare Parts

Parts and accessories replacement:

WARNING:

Hazards may be introduced because of component failure or improper operation.

INSTRUCTION:

- Replace defective parts with Agfa HealthCare original spare parts.
- Use only tools and measuring instruments which are suitable for the procedure.
- Only approved Agfa HealthCare accessories must be used. For a list of compatible accessories contact your local Agfa HealthCare organization or www.agfa.com.

12 Compliance

Directive for HealthCare Imaging Products:
Council Directive 93/42/EEC of 14 June 1993 concerning medical devices
(OJ No L 169/1 of 1993-07-12)

- ANNEX I - ESSENTIAL REQUIREMENTS - GENERAL REQUIREMENTS The products are designed and manufactured in such a way that, when used under the conditions and for the purposes intended and, where applicable, by virtue of the technical knowledge, experience, education or training of intended users, they will not compromise the clinical condition or the safety of patients, or the safety and health of users.

- ANNEX II - EC DECLARATION OF CONFORMITY: Full quality assurance system ISO 13485

- ANNEX X - CLINICAL EVALUATION: The clinical evaluation follows a defined and methodologically sound procedure.

Applied Standards for HealthCare Imaging Products

- IEC 60601-1, Ed. 3: Medical electrical equipment - Part 1: General requirements for basic safety and essential performance

- ISO 14971:2000, Medical devices – Application of risk management to medical devices

- IEC 60601-1-2, It specifies the MANUFACTURER of the ME EQUIPMENT or ME SYSTEM provides information to the RESPONSIBLE ORGANIZATION that is essential in determining the suitability of the ME EQUIPMENT or ME SYSTEM for the electromagnetic environment of use, and in managing the electromagnetic environment of use to permit the ME EQUIPMENT or ME SYSTEM to maintain BASIC SAFETY and provide its ESSENTIAL PERFORMANCE without disturbing other equipment.

Additional standards for documentation:

IEC 62079 Ed. 1: Preparation of instructions - Structuring, content and presentation

Harmonization:

Global Harmonization Task Force (GHTF) www.ghtf.org/

This document has been prepared to comply with Study Group 1 guidance document of the Global Harmonization Task Force (GHTF) www.ghtf.org/ to assist development of a consistent, harmonized definition for a medical device that could be used within a global regulatory model and would offer significant benefits to the manufacturer, user, patient or consumer, and to Regulatory Authorities and support global convergence of regulatory systems.

IECEE CB SCHEME

The IECEE CB (Certification Body) Scheme is the world's first truly international system for acceptance of test reports dealing with the safety of electrical and electronic products. It is a multilateral agreement among participating countries and certification organizations. Agfa has produced a CB test report and claims national certification in all other member countries of the CB Scheme.

Details see www.iecee.org

Radiation of radio frequency:

CAUTION: For USA only:

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the service manual, may cause interference to radio communication.

Note:

This product has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference.

The user will be required to take all necessary measures to correct the interference at his own expense.

13 Safety Directions for Operation

Accessibility of the mains power switch:

CAUTION:
Do not obstruct the mains power switch.

Position the Agfa HealthCare product so that it is possible to disconnect the mains power connection.

- Under certain conditions the Agfa HealthCare product will show a display containing a message. This message will show that either a problem or action has occurred or that a requested action is required or cannot be performed. The user must read these messages carefully they will provide information on what to do. This will be either performing an action to resolve the problem or to contact the Agfa HealthCare service organization. Details on the contents of messages can be found in this Technical Documentation.
- All images created using any image technology can show artifacts which could be confused with diagnostic information. If there is any doubt that the diagnostic information could be corrupted, additional investigations must be performed to get clear diagnostic information.
- Ventilation openings must not be covered.
- If you notice conspicuous noise or smoke, disconnect the product immediately from the mains.
- Do not pour water or any other liquid over the device.
- If a system malfunction causes an emergency situation involving the patient, operating personnel or any system component, activate the emergency stop for the system concerned. All motor driven system movements will be stopped.
- Do not store any magnetic media near or on devices, which produce magnetic fields, since stored data may be lost.

Explosive environment:

DANGER:

Risk of explosion.

Never operate this device in zones where there are flammable anesthetics or oxygen which may cause an explosion.

Usage of an un-interruptible power supply:

Warning:

Images can be lost due to power failure.

Connect the equipment to an un-interruptible power supply (UPS) or an institutional standby generator.

14 Radiation Protection

Only qualified and authorized personnel shall operate any X-Ray system. In this context qualified means those legally permitted to operate this X-Ray equipment in the jurisdiction in which the X-Ray equipment is being used, and authorized means those authorized by the authority controlling the use of the X-Ray equipment. Full use must be made of all radiation protection features, devices, systems, procedures and accessories.

Ionizing radiation can lead to radiation injuries if handled incorrectly. When radiation is applied, the required protective measures must be complied with.

15 Safety Directions for Cleaning and Disinfection

- Details about cleaning and disinfection or sterilization methods that may be used on SYSTEM parts or ACCESSORIES that can become contaminated through contact with the PATIENT or with body fluids, are referred to within the individual service documents.
- Disconnect the power supply from the equipment prior to cleaning the equipment.

16 General Safety Directions for Service Activities

- This system uses high voltage. Please consider the respective safety regulations.
- Electrical repairs and connections must only be performed by a qualified electrician.
- Mechanical repairs and connections must only be performed by a qualified technician.
- The safety directions for operation (see section 13) are also valid for all service activities.
- During all service activities observe prescribed local and country-specific requirements (e.g. occupational safety and accident prevention regulations).
- All existing screw connections must be tightened sufficiently firmly, but they may not be overstressed when tightening. There must always be compliance with stated torque values!
- Damaged or missing screws may be replaced only with the same screw types that have the specified hardness rating. Unless a different value is listed in the instructions, all Allen screws used must be hardness rated 8.8.
- All screws must be secured in accordance with the corresponding data.
  If "Loctite" has to be used to secure screws, this is stated in the text.
- Any Agfa service PC or tool which is to be connected via RS232, RJ45, USB or other interface to an Agfa device must not be connected to the mains but must be operated on its internal battery or indirect supply (low voltage).

- When handling printed circuit boards (abbr.: PCBs) the following points must be observed:
  - Always switch off the equipment and unplug the power cord, before you disconnect or connect cables on printed circuit boards.
  - When working on PCBs, always wear an anti-static wrist strap. Never touch any parts or components on PCBs with your bare fingers.
  - PCBs have to be kept or transported in their protection bags. Never carry a PCB without protection bag and walk on carpet or plastic floor covering (electrostatic charge).
  - Once the PCB is taken out of its protection bag, it has to be protected from electrostatic charge by a grounded mat.

Static discharge at electrical components:

CAUTION:
Static discharge! Electrical components may be destroyed:

For the repair on electrical components, wear a grounding strap
(Order number: CM+9 9999 0830 0) around the wrist and connect the other end of this strap on a grounded conducting metal piece.

17 Safety Directions for Installation Planning Activities

Protecting CR (Computed Radiography) Equipment against scattered X-Rays:

Warning:

Image plate is sensitive for X-rays. Poor image quality possible.

The digitizer and the cassette storage shall be protected against X-ray radiation this way, that the annual dose equivalent at the installation place will not exceed 1 mSv.

Protecting Film-Screen Systems against scattered X-Rays:

Warning:

Film is sensitive for X-rays. Poor image quality possible.

The film-screen system shall be protected against X-ray radiation this way, that the annual dose equivalent at the installation place will not exceed 1 mSv.

Accessibility of the power disconnection device:

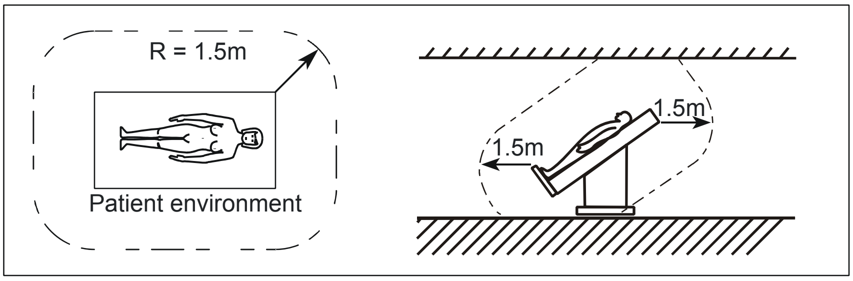
Warning:

Electrical device. Shock possible.

INSTRUCTION:

- Do not position Agfa EQUIPMENT so it is difficult to operate the disconnection device when an APPLIANCE COUPLER or separable plug is used as isolation.
- Local and International wiring regulations must be observed. Check all supplies and voltages, currents, trips and fuses with the Hospital facilities department or their engineers.

- The device complies with the EN 60601-1, 2006 standard for Information Technology. This means that, although it is absolutely safe, patients may not come in direct contact with the equipment. Therefore the operator console must be placed outside a radius of 1.5 m around the patient.



- This device should be installed behind the institution firewall for network security and anti-virus protection. No ongoing computer virus protection or network security for this medical device is provided (e.g. a computer firewall). Network security and anti-virus provisions are the ongoing responsibility of the user or institution.

Fixing equipment at the wall or floor:

Warning:

Unknown composition of wall or floor structure: Risk of injury or damage:

Hospital management is responsible for the position, location and fixing of all equipment.

Floor load:

CAUTION:

Heavy device may damage the floor covering.

Make sure that the floor covering is solid enough to stand the weight of the device.

Fixing equipment at the ceiling:

CAUTION:

Ceiling construction may be inadequate for fixing of equipment: Risk of injury or damage:

Hospital management is responsible for the position, location and fixing of all equipment.

18 Safety Directions for Installation Activities

- If not otherwise stated, installation and configuration is performed by Agfa HealthCare trained personnel.
- If damage of the package is visible from the outside contact your local AGFA representative.
- Apart from wearing the required protective clothing, e.g. safety boots and gloves, care must be taken that heavy loads are correctly lifted/carried to avoid injury. The relevant instructions must be complied with. Heavy or awkward loads must be moved by mechanical means or by several people.
- When installing the product be sure that there is either a mains plug or an all-cable disconnecting device in the internal installation fitted near the product and that it is easily accessible.
- Defective covers, sharp edges or protruding parts of equipment can cause injuries, if accidentally knocked into. Route cables and position equipment safely.
- This device should be installed behind the institution firewall for network security and anti-virus protection. No ongoing computer virus protection or network security for this medical device is provided (e.g., a computer firewall). Network security and anti-virus provisions are the ongoing responsibility of the user or institution.

Connection of the device to the power supply:

CAUTION:
Risk of damaging the device by using the wrong power supply:

INSTRUCTION:

Prior to connecting the device to the mains:

- Compare the power requirements indicated on the type label with the available power supply in the installation room.
- Check the service manual for the type of input voltage selection, manual or automatic: If manual, select the appropriate voltage and fuses.
- Confirm to use the correct socket and plug for the required power supply.
- Check the equipment will work with the power supply available.

Ground potential differences:

CAUTION:

To comply with ISO 60601-1 (annex I) all computers and peripherals must be connected to the same power source.

INSTRUCTION:

- Always connect the associated monitor to the same Uninterruptible Power Source as the PC.
- When different combinations of equipment are used in various medical environments a potential difference (V) can exist between the protective earths in different localities. If the protective earthing fails this potential difference can cause a HAZARD for the OPERATOR or for the PATIENT.

19 Safety Directions for Maintenance and Repair Activities

- This Technical Documentation identifies the parts on which preventive inspection and maintenance shall be performed by Agfa HealthCare service personnel, including the periods to be applied.
- In general the device has to be switched off during service activities. Exception: If the device is switched on to perform tests pay particular attention to any hazards due to moving and rotating parts. Avoid lose clothing or finger traps. Switch off the device immediately after the tests.
- Do not turn motors manually. If required, first disconnect the motor from the motor control board.
- Make sure that the power cord does not show any signs of damage.
- After repair work always check that the integrated safety features are not overridden or disconnected.
- If there is any visible damage to the machine casing do not hand-over the product to the customer. First repair the machine casing.

Replacing batteries:

⚠ **WARNING:**

Battery can explode, causing chemical burns.

INSTRUCTION:

- Check that batteries are inserted with correct polarity.
- Only use batteries of the same type or an equivalent type as specified by the manufacturer.
- Dispose of empty batteries in compliance with the specifications of the manufacturer.
- When removing lithium batteries from the equipment take appropriate measures to avoid short circuit of the battery:
  Either use tape to cover the two poles of the battery or put the battery back in its original packing and secure the packing by tape.

Performing the electrical test according to national regulations:

⚠ **WARNING:**

Improper ground connections inside the device or too high leakage current may lead to electric shocks.

- After any work at the power supply or at any component connected to mains voltage inform the responsible organization[1] about the necessity of the electrical test according to national regulations.
  If specific national regulations do not exist: It is recommended to perform the electrical test according to IEC 62353.
- Make sure, that all grounding connections to metallic covers and all grounding connections inside the device are present.

✓ NOTE:

On MedNet, GSO Library path "General Info => Agfa HealthCare => Publications => Service Manual" a form “IEC 62353:2007 Test Documentation” for CR Digitizers is available, to be handed out to the responsible organization (Intranet Link / Extranet Link).

---

[1] Responsible Organization:
Entity accountable for the use and maintenance of a medical equipment or a medical equipment system. The accountable entity can be, for example, a hospital or an individual clinician.

Performing service activities at devices emitting laser radiation:

WARNING:

Laser radiation. Eye injury possible.

INSTRUCTION:

- Strictly observe the warning notes in the service manual of devices emitting laser radiation (See service manual chapter describing Safety Guidelines / General Repair Instructions) and at the corresponding steps of instructions.
- Strictly observe the warning labels at the modules emitting laser light. For the meaning of the labels refer to section 3.3 in this document.
- Do not look into the laser beam.
- Do not open modules containing a laser. Only open modules containing a laser if explicitly instructed to do so.
- Do not keep tools in the laser beam unless explicitly instructed to do so.
- Make yourself familiar with the path of the laser light and the conditions, when the laser beam is switched on. Refer to the Functional Description in the corresponding service manual.
- Do not operate modules with laser outside the device.

Sharp edges:

CAUTION:

Sharp edges inside the device: Cut or abrasion possible.

Be careful at maintenance and replacement of parts.

Cleaning optical elements:

CAUTION:
Image artifacts possible after cleaning optical elements.

When cleaning optical elements follow the service manual precisely.

Secured screws:

CAUTION:

Opening screws secured by red lacquer may misalign important device adjustments:

Do not open screws that are secured by red lacquer.

Opening PCs and Workstations:

Warning:

Electrical shock and damage to the equipment possible.

- Only open the PC or workstation if explicitly stated in the service manual.
- Unplug before opening.
- Observe anti-static safety regulations.

Replacing fuses:

Warning:

Replacing fuses by wrong type may lead to fire hazard!

Use only fuses of the exact value and characteristics stated in the service manual or on the device.

20 Safety Directions for remote Service Activities

Remote Service Activities:

Warning:

During remote service activities images can be lost.

Inform the customer prior to remote service activities to finish the current work and to stop working on the system.

21 Safety Directions for Transport and Shipment of Spare Parts, Accessories and Devices

- In compliance with transport regulations, all uninterruptible power supplies (UPS) must be shipped with batteries disconnected.
- Use the original packing when returning spare parts, accessories or devices.
- Before returning any spare part with a built in lithium battery remove it and dispose the batteries locally according to local waste regulations.

22 Safety Directions concerning Modifications

Modifications made in products/systems shipped by Agfa HealthCare must not be implemented without written permission from Agfa HealthCare.

This applies in particular to changes which may affect the mechanical and/or electrical safety or radiation-protection properties of a product (e.g. changing of safety distances, removal of locks/instructions etc.).

23 Safety Directions concerning Hazardous Materials

'Hazardous materials' is the designation for substances which can ignite or explode or which are toxic, injurious to health, corrosive or irritating. The “Hazardous Material” instructions must be read and the required protective measures must be complied with when performing work to avoid health risks.

Their properties together with the hazards and protective measures connected with them are identified clearly by symbols and described by the instructions appertaining to the hazardous substances.

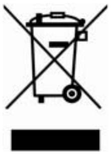
24 Recycling

Agfa HealthCare has Recycling Passports available for all equipment. The Recycling Passport explains whether hazardous materials, special components and batteries are present, where they are located and how they can be removed at the end of the life cycle.

The Recycling Passports are meant to be used as information for waste treatment partners and companies that want to recycle end-of-life Agfa equipment.

To get a copy of the required Agfa HealthCare Recycling Passport please contact your local Sales organization.

25 Waste Disposal



On August 13, 2005, the European Directive on Waste Electrical and Electronic Equipment (WEEE) 2002/96/EC, amended by Directive 2003/108/EC, came into force.

The directive on Waste Electrical and Electronic Equipment (WEEE) aims to prevent the generation of electric and electronic waste and to promote the reuse, recycling and other forms of recovery. It therefore requires the collection of WEEE, recovery and reuse or recycling.
This directive has to be implemented into national law by the individual European countries by August 13th 2005.

Due to the implementation into national law, specific requirements can be different within the European Member States.

This symbol on the product, or in the manual and in the warranty, and / or on its packaging indicates that this product shall not be treated as household waste.

For more detailed information about take-back and recycling of this product, please contact your local Agfa service organization. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources.
If your equipment or replaced spare parts contain batteries or accumulators please dispose of these separately according to local regulations.

26 Erasing Protected Health Information (PHI)

AGFA HealthCare Field Service Personnel or its authorized affiliates are responsible for the removal of Protected Health Information (PHI) patient data from devices, modules or parts that are removed from the customer’s site. This also applies to the exchange of spare parts, especially to parts that are returned to central warehouses for repair or refurbishing. Examples for parts or modules that may contain Protected Health Information (PHI) are: Computer hard disks, CD-ROMS, backup tapes, archive tapes.

Chapter 1

Controls, Connections, and Setup Procedures

Document No: DD+DIS150.06E

CR 30-X

Type 5175 / 100/110

Purpose of this Document

This document describes:

- All important routines to be carried out prior to putting the machine in operation
- Location and function of the controls and connectors of the machine
- All routines necessary to put an unpacked machine in operation

Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.4:
1.5	11-2009	• Added step to configure maintanence indicator. Details see section 5.3. • Added step to perform a backup. Details see section 7.1. • Removed step to fill in "Site and System Data" and "Installation Report" Forms. • Removed step to register digitizer at installation, as this is not required anymore with software ≥ CRE_1607.

Referenced Documents

Document	Title
DD+DIS287.09E	CR 30-X Service Bulletin No. 30 - Software CRE_1607 available

Document Node ID: 14352492
eq_01_setup_procedure_e_template_v07
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► Manufacturer

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Publisher

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Germany

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type 'Order List' in the GSO library.

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1 Scope of this Document

This document describes the installation and configuration of the digitizer.

It is additionally required to perform installation and configuration of the NX Workstation. Refer to Chapter 4 of the corresponding NX Workstation version in the Mednet GSO Library: **`<GSO Library => Computed Radiography => CR Workstation Software>.`**
The required NX workstation documents are also available on CD-ROM as part of the NX workstation delivery.

For installation instructions of optional digitizer components like “All-in-one Cart”, UPS or Wall Fixation Kit refer to the accompanying document of the option.

✓ NOTE

The PC to which the digitizer is connected to is further named in this document:

- **Control PC**, in its function to control the digitizer.
- **NX Workstation**, in its function to have the NX image processing software running on it.

✓ NOTE:
The **Installation Checklist** in section 8 of this chapter gives an overview of all steps of the digitizer installation and guides through the complete installation process.

2 Prerequisites for Installation

The purpose of this section is to show the required tasks before installation to guarantee a smooth digitizer installation.

Task	Required Time	Importance	Task Code*	Section
Check installation site prerequisites.	15 minutes	mandatory	PRI	2.1
Prepare required tools.	5 minutes	mandatory	PRI	2.2

*Complete required time per Task Code to be entered in the Agfa repair report.

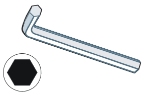
2.1 Checking the Installation Site Prerequisites

(1) Confirm that all prerequisites described in the "Installation readiness checklist" are fulfilled.
This checklist is available at the end of CR 30-X Service Documentation Chapter 11, Installation Planning.

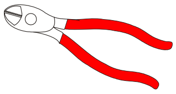
2.2 Preparing the required Tools

Following tools are required during the installation procedure:

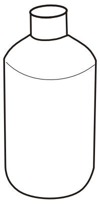
REQUIRED TOOLS:



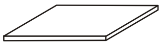
3 mm



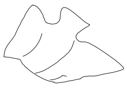
cutter



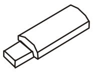
CR screen cleaner
Spare part number*:
10+9 9999 1197 0



1,5 mm Copper Filter.
Spare part number:*
CM+9 5155 1015 2
(Part of digitizer delivery)



Lint free
cloth



USB Stick
(checked to be virus free)

*The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

3 Inspection and Unpacking

Task	Required Time	Importance	Task Code*	Section
Check the packing for obvious damage.	1 minute	mandatory	INS	3.1
Unpack digitizer (if not yet done).	10 minutes	mandatory	INS	3.3
Check shipment completeness.	5 minutes	mandatory	INS	3.3

*Complete required time per Task Code to be entered in the Agfa repair report.

3.1 Checking the Packing for obvious Damage

(1) Check the packing material for visible transport damage such as:

- Dented edges
- Damage on the box
- Torn fixing elements (metal straps)

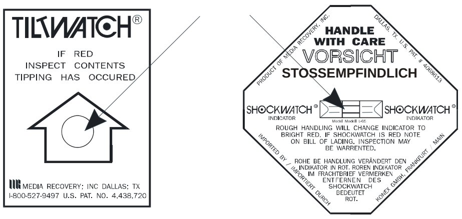
(2) Check the attached safety indicators on the packing boxes.

IMPORTANT:

If the machine was tilted, the circle in the arrow head of the TILTWATCH changes from white to red.

If the machine was subjected to shocks, the square field in the middle of the SHOCKWATCH changes from white to red.

If damage is visible from the outside contact your local AGFA representative.


White field is OK.
Red field is not OK.
TILTWATCH®
IF RED
INSPECT CONTENTS
TIPPING HAS OCCURED
MEDIA RECOVERY; INC DALLAS; TX
I-800-527-9497 U.S. PAT. NO. 4,438,720
PRODUCT OF MEDIA RECOVERY, INC.
DALLAS, TX. U.S. PAT. # 4068613
HANDLE
WITH CARE
VORSICHT
STOSSEMPFINDLICH
SHOCKWATCH® INDICATOR
SHOCKWATCH® INDIKATOR
Model Modell L-65
ROUGH HANDLING WILL CHANGE INDICATOR TO BRIGHT RED. IF SHOCKWATCH IS RED NOTE ON BILL OF LADING. INSPECTION MAY BE WARRENTED.
ROHE BE HANDLUNG VERÄNDERT DEN INDIKATOR IN ROT. ROREN INDIKATOR IM FRACHTBRIEF VERMERKEN ENTFERNEN DES SHOCKWATCH BEDEUTET ROT.
IMPORTED BY / IMPORTIERT DURCH
KONEX GMBH, FRANKFURT / MAIN

3.2 Unpacking the Digitizer

(1) Unpack the digitizer. The unpacking instructions are printed on the digitizer box. Figure 1 shows an example of the unpacking instructions.

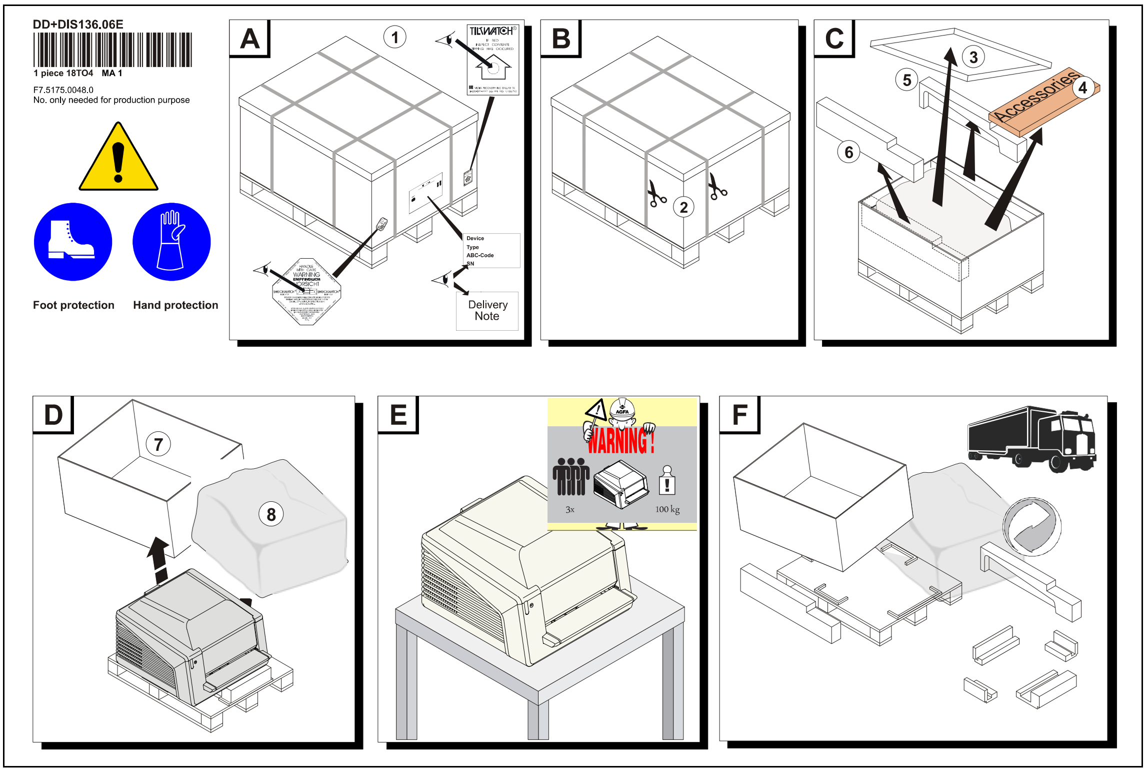

DD+DIS136.06E
1 piece 18TO4 MA 1
F7.5175.0048.0
No. only needed for production purpose
Foot protection
Hand protection
A
1
TILTWATCH
Device
Type
ABC-Code
SN
Delivery Note
B
2
C
3
4
5
6
Accessories
D
7
8
E
WARNING!
3x
100 kg
F

Figure 1: Example for unpacking instructions on the digitizer box

WARNING:
The digitizer is heavy (98 kg; 216.1 lb). Risk of injuries when lifting the digitizer.

- At least three people have to lift the digitizer from one position to the other.
- Use proper shoe and hand protection when lifting the digitizer.

WARNING:
Excessive vibrations during scanning may decrease image quality.

The structure and stability of the used table need to be suitable in relation with the size and weight of the system. The table may not be subject to excessive shock and vibrations from other sources.
For more information refer to the Installation Planning document DD+DIS172.06E (Intranet Link / Extranet Link).

(2) Lift the digitizer from the pallet on the provided table.

3.3 Checking the Shipment Completeness

(1) Compare the scope of delivery with the packing list.

(2) In case the delivery is not complete contact the Regional Support Network (RSN). External partners: Contact your local Agfa Representative.

4 Performing Digitizer Setup

The purpose of this section is to show the required installation tasks.

The following table lists these tasks:

Task	**Required Time**	**Importance**	**Task Code***	**Section**
Mount the distance holder.	5 minutes	mandatory	INS	4.1
Connect the cables.	2 minutes	mandatory	INS	4.2
Switch on the digitizer.	3 minutes	mandatory	INS	4.3

*Complete required time per Task Code to be entered in the Agfa repair report.

4.1 Mounting the Distance Holder

REQUIRED PARTS (part of delivery):

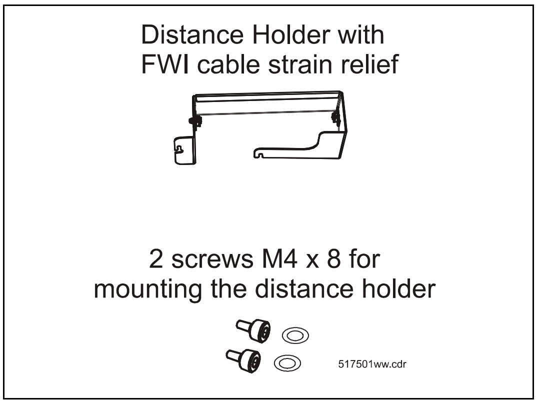

Distance Holder with
FWI cable strain relief
2 screws M4 x 8 for
mounting the distance holder
517501ww.cdr

Figure 2

(1) Remove two screws in the rear.

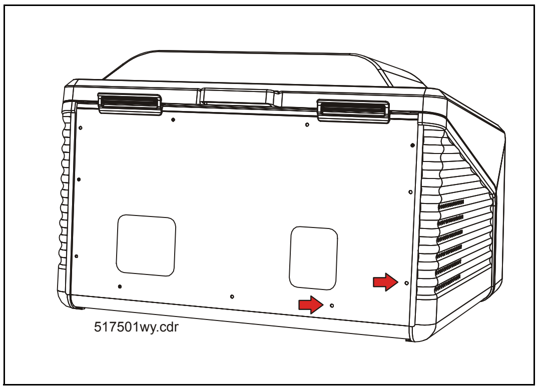


Figure 3

(2) Mount distance holder.

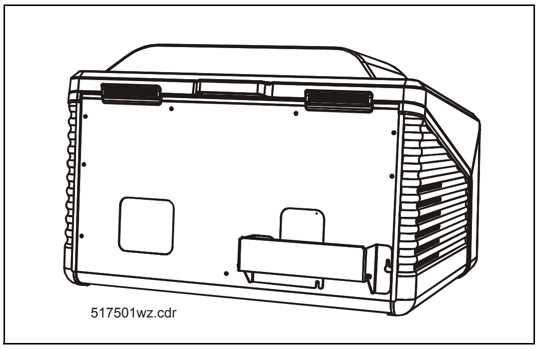


Figure 4

4.2 Connecting the Cables

WARNING:

Using a FWI cable > 4.5 m (15 ft) may lead to unstable or no communication between digitizer and NX workstation: Retakes possible.

To connect digitizer and control PC, only use a standard 6-pin FWI cable with a max. length of 4,5 m or 15 ft respectively.

WARNING:

Using different power circles may lead to ground potential differences: In this case the leakage current via FireWire cable may exceed the limits as defined by IEC 60601:

Confirm that both, control PC and digitizer are connected to the same ground, e.g. via multiple socket or UPS.

When connecting digitizer and control PC at two different sockets, installed in the wall: Inform the hospital technician that digitizer and control PC have to be connected to the same ground and the same phase.

(1) Connect the power cable.

(2) Connect the FireWire cable between digitizer and control PC.

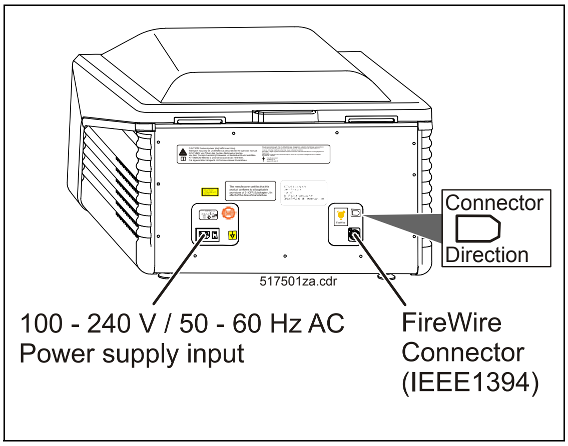

Connector
Direction
517501za.cdr
100 - 240 V / 50 - 60 Hz AC
Power supply input
FireWire
Connector
(IEEE1394)

Figure 5

(3) Fasten the FireWire cable at the cable holder left or right.

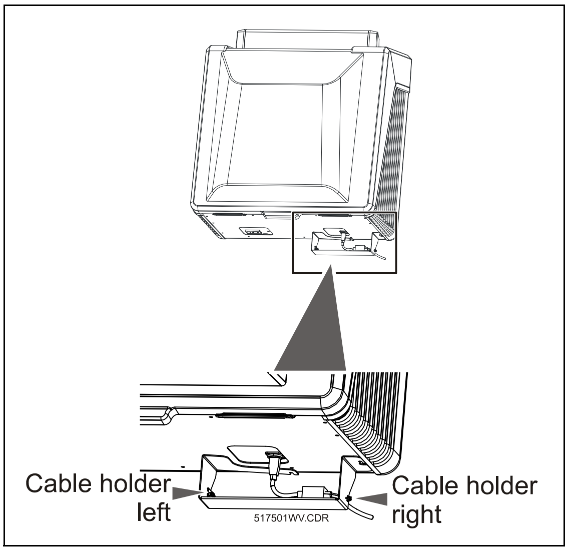

Cable holder
left
517501WV.CDR
Cable holder
right

Figure 6

IMPORTANT:

- For the Fire Wire cable connection to the NX Workstation as Laptop Version use the 6 pin to 4 pin FWI connector which is part of delivery.
- Do **not** place the laptop on top of the digitizer, because the accumulated heat developed by the digitizer and the laptop may affect the operation of the system.

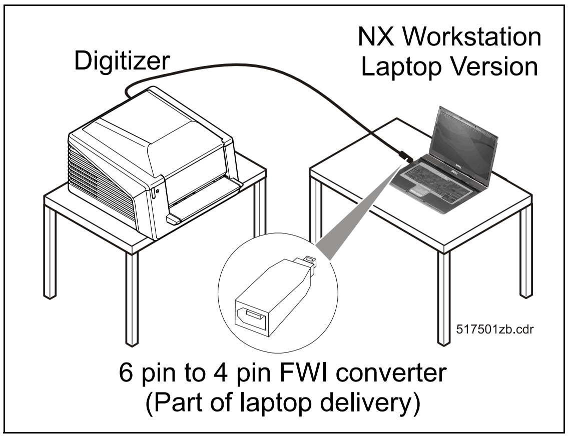

Digitizer
NX Workstation
Laptop Version
517501zb.cdr
6 pin to 4 pin FWI converter
(Part of laptop delivery)

Figure 7

4.3 Switching the Digitizer on

(1) Switch on the control PC.

(2) Switch on the digitizer.

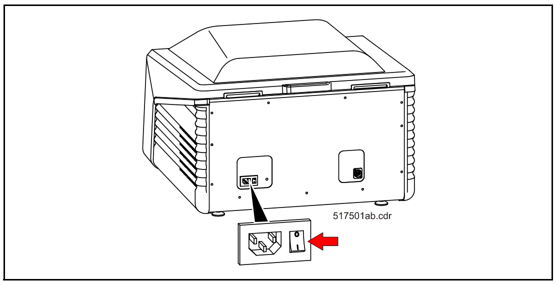


Figure 8: On-off Switch

NOTE:

After switch on a selftest is executed.

- If the NX workstation is operational it takes approximately 1 minute until the status indicator at the front panel changes from red to green.
- If the NX workstation is not yet switched on or installed, the status indicator will stay red flashing.

See Table 1 for meaning of the status indicator colors.

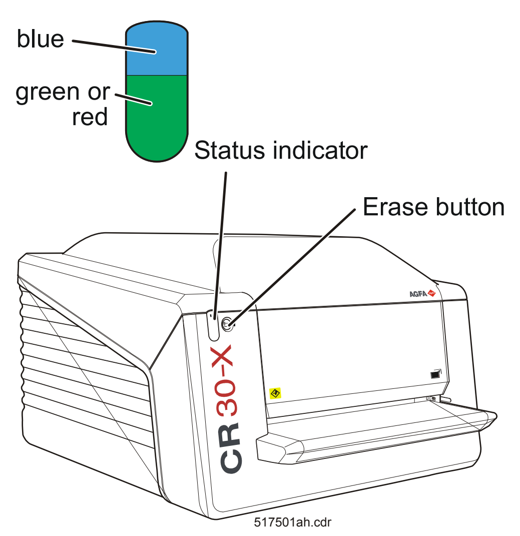


Figure 9

Status Indicator	Digitizer Status	Allowed user action
Blue - Constant	Erasure cycle active	Wait.
Green - Constant	Ready	Insert next cassette for scanning.
Green - Flashing	Scan cycle active	Wait.
Red - Constant	Service mode	Check control PC for further instructions.
Red - Flashing	• Boot-Up • No connection to control PC • Error	

Table 1: Description of Status Indicator

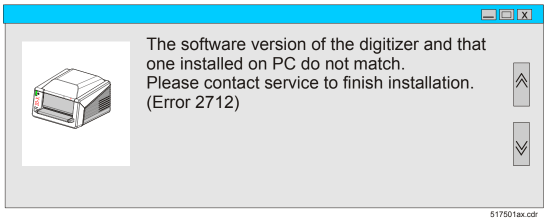
DOCUMENT CONTROL NOTE:
The controlled version of this document resides on MedNet. Any printed copy of this document is uncontrolled.

✓ NOTE:

If error 2712 pops up on the control PC:

This error indicates, that the installed software in the Digitizer and on the Control PC (ASAP software) are not identical.

This error will be solved with steps described in section 5.2.



The software version of the digitizer and that one installed on PC do not match.
Please contact service to finish installation.
(Error 2712)

Figure 10

5 Configuring Digitizer Settings

The purpose of this section is to show the required installation tasks.

The following table lists these tasks:

Task	**Required Time**	**Importance**	**Task Code***	**Section**
Fill in site specific data.	5 minutes	mandatory	INS	5.1
Check software version.	2 minutes	mandatory	INS	5.2
Configure Maintenance Indicator.	5 minutes	optional	INS	5.3

*Complete required time per Task Code to be entered in the Agfa repair report.

5.1 Filling in of Site specific Data

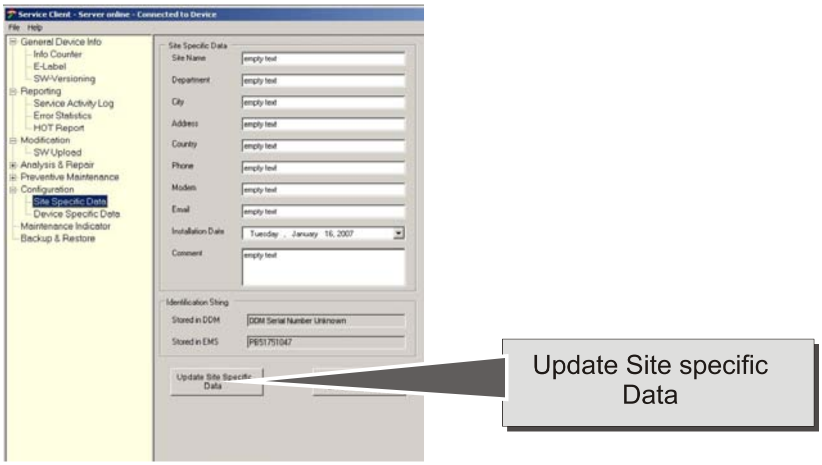
(1) On the control PC select: **`<Start - Programs - Agfa CR 30-X - Service Client>`**

(2) Enter user name and password.

(3) Select: **`<Configuration - Site Specific Data>`**

(4) Enter the site specific data.

(5) Select: **`<Update Site Specific Data>`**


Service Client - Server online - Connected to Device
File
Help
General Device Info
Info Counter
E-Label
SW-Versioning
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
SW Upload
Analysis & Repair
Preventive Maintenance
Configuration
Site Specific Data
Device Specific Data
Maintenance Indicator
Backup & Restore
Update Site Specific Data

Site Specific Data

Site Name: empty text
Department: empty text
City: empty text
Address: empty text
Country: empty text
Phone: empty text
Modem: empty text
Email: empty text
Installation Date: Tuesday , January 16, 2007
Comment: empty text

Identification String

Stored in DDM: DDM Serial Number Unknown
Stored in EMS: PB51751047

Update Site specific Data

517501ez.cdr

Figure 11

5.2 Checking Software Version

NOTE

The digitizer only boots-up completely if the software version on the digitizer and the software version on the control PC (Software for download to the digitizer) match. It may happen that the delivered digitizer and the control PC do have a different digitizer software version installed In this case error 2712 appears with each re-boot of the control PC.

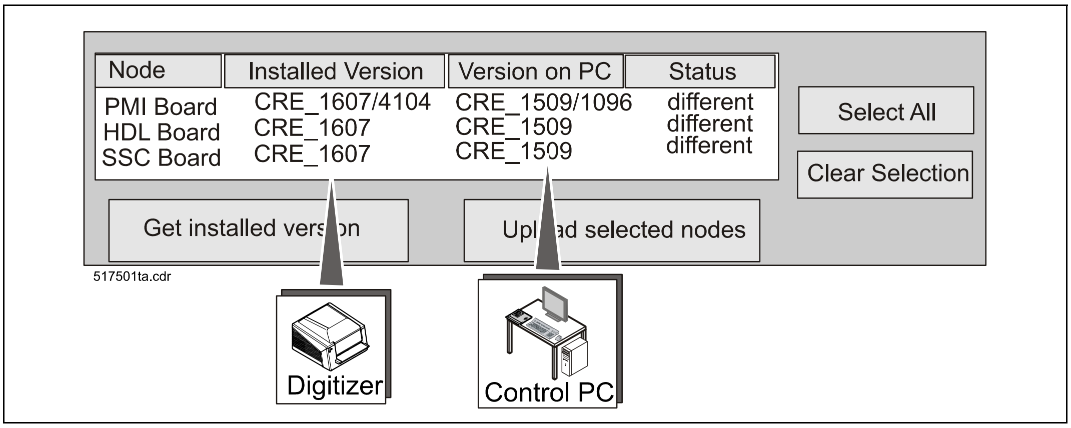
(1) Log-off the current user at the control PC.

(2) Login as user **`crservice`**.

(3) Select menu: **`<Start - Programs - Agfa CR 30-X - Service Client>`**

(4) Enter user name and password.

(5) Select **`<Get installed version>`**.



Node	Installed Version	Version on PC	Status
PMI Board	CRE_1607/4104	CRE_1509/1096	different
HDL Board	CRE_1607	CRE_1509	different
SSC Board	CRE_1607	CRE_1509	different

Figure 12: Example screen after selecting "Get installed version"

(6) Evaluate as follows:

- If “Installed version” < “Version on PC”:
  Perform a software upload to the digitizer (Select nodes – Upload selected nodes). For details refer to Service Documentation Chapter 3.2, Tools and auxiliary Means.
- If “Installed version” > “Version on PC” (like in the example of Figure 12):
  Perform digitizer software installation on the control PC.
  The digitizer software is part of delivery.
  Refer to the installation instructions on delivered software CD-ROM.
- If “Installed version” = “Version on PC”:
  Okay. No further action required.

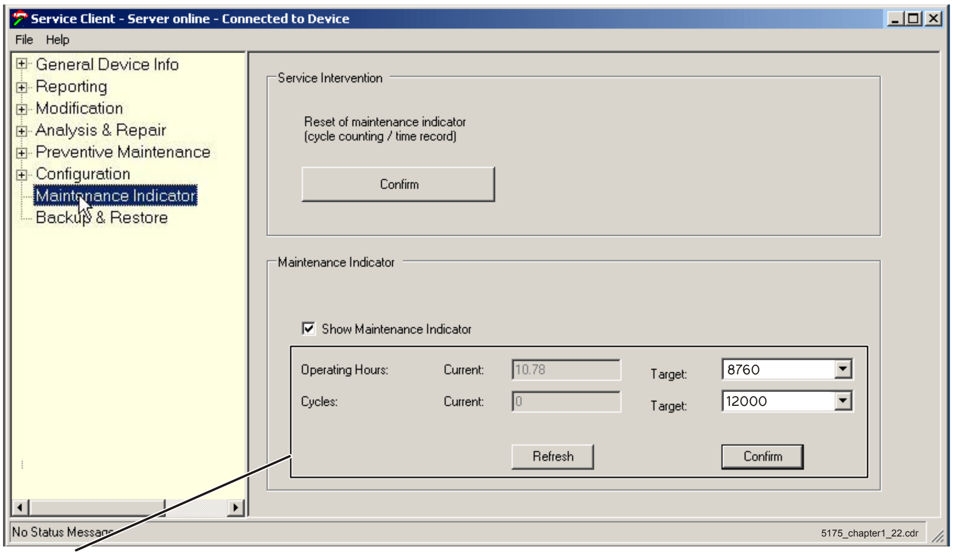
5.3 Configuring Maintenance Indicator

(1) In the CR 30-X Service Client select <Maintenance Indicator>.

(2) Configure whether maintenance indicator should be activated shown or not (default = off).

- "On" (checkbox selected) means:
  Customer will be reminded daily or when starting the Control PC to perform about a preventive maintenance via following message:
  - o "Maintenance interval will expire within a short time. Please contact service." This message appears approximately 6 weeks before the defined maintenance due date or due cycles (Default: 1 year / 12.000 cycles) are reached.
  - o "Maintenance interval expired. Please contact service." appears, when the maintenance due date or due cycles are expired is counter is reached.
- "Off" means: Maintenance indicator is deactivated. The customer will not be reminded about preventive maintenance.

(3) If required adapt the Change default target values for "Operating hours" and "Cycles" according to the local terms of service agreement.


Service Client - Server online - Connected to Device
File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Confirm
Refresh
Confirm
5175_chapter1_22.cdr

Service Intervention

Reset of maintenance indicator (cycle counting / time record)

Maintenance Indicator

☑ Show Maintenance Indicator

Operating Hours: Current: 10.78 Target: 8760

Cycles: Current: 0 Target: 12000

No Status Message

Operating Hours and Cycles only displayed if “Show Maintenance Indicator” is activated.

Figure 13

NOTE:

Changing the target values for operating hours and cycles is only available as of software version CRE_1607.

6 Set Digitizer operational

The purpose of this section is to show the tasks that are required to set the digitizer operational.

The following table lists these tasks.

Task	Required Time	Importance	Task Code*	Section
Check technical image quality of the digitizer.	30 minutes	mandatory	INS	6.1

*Complete required time per Task Code to be entered in the Agfa repair report.

6.1 Checking the Technical Image Quality of the System

During the “Technical Image Quality Check” of the system a flatfield image is exposed and checked at the lightbox. The procedure is divided in following steps:

#	Task	Section
1	Clean and check the image plate.	6.1.1
2	Erase the cassette.	6.1.2
3	Expose the cassette.	6.1.3
4	Scan the flatfield.	6.1.4
5	Check the image at the lightbox or viewing station.	6.1.5

6.1.1 Checking Image Plate before Exposure

(1) Select the largest available cassette. If possible, use a 35x43 cm Genrad cassette.
If in size 35x43 cm only FLFS cassettes are available, use a FLFS cassette.
Distinction between Genrad and FLFS cassette see Figure 22 on page 21.

(2) Insert an edgeless means, e.g. a pen into the cassette lock.

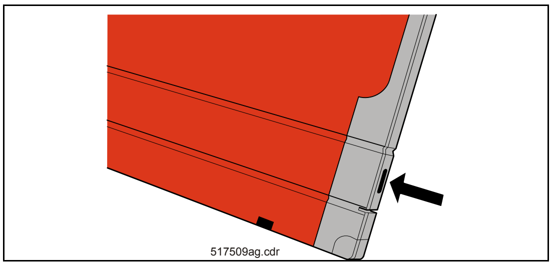

517509ag.cdr

Figure 14

(3) Open the shutter.
(4) Turn the cassette around, so that the black tube side is above.
(5) Let the black tray and image plate slide out carefully onto the table.

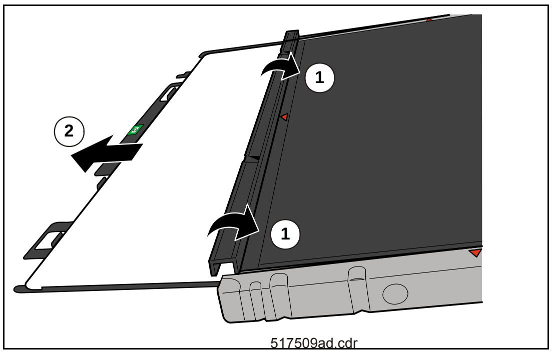

1
2
1
517509ad.cdr

Figure 15

(6) Put the black tray with the image plate onto the cassette.
(7) Check the image plate for scratches.
(8) Clean the image plate if required.

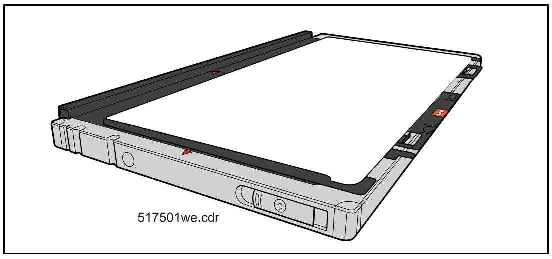

517501we.cdr

Figure 16

(9) Put the tray with the image plate back into the cassette.
(10) Verify that the white phosphor side is oriented to the black tube side of the cassette and that the shutter does not scratch the image plate.
(11) Insert an edgeless means, e.g. a pen into the cassette lock while closing the shutter.

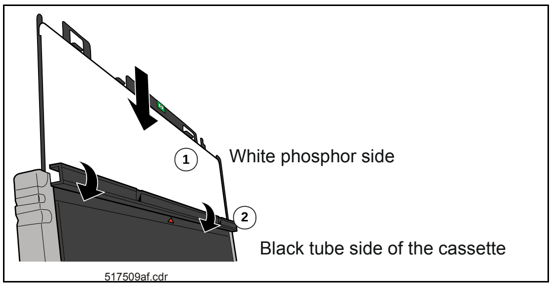

① White phosphor side
② Black tube side of the cassette
517509af.cdr

Figure 17

6.1.2 Erasing the Cassette

(1) Press the Erase button.
The Digitizer switches to erase mode.
The status indicator is continuously lighting up in blue.

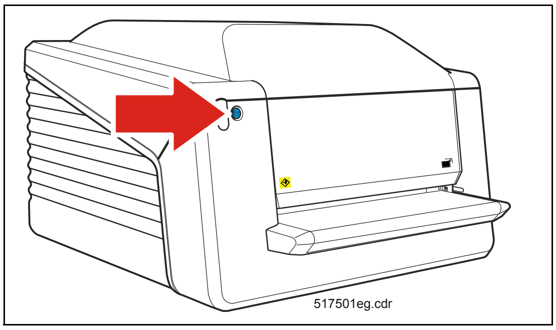


Figure 18: Digitizer erase button

(2) Put the cassette in the digitizer:
Erasing starts.

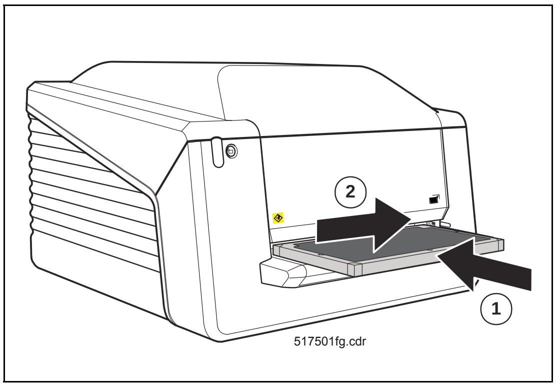


Figure 19

(3) Remove the cassette with the erased image plate from the cassette output.

6.1.3 Creating the Flatfield Test Image

(1) Mount the Cu Filter at the General Radiology modality.

(2) Expose the prepared cassette with approximately 10 µGy.

(3) Turn the cassette by 180°.

(4) Expose again with 10 µGy.

✓ NOTE:

Select the following exposure parameters using a 1.5 mm Cu filter (CM+9 5155 1015 2) to obtain a dose of 10 µGy:

- 12 mAs
- 75 kVp
- 1.3 m (51,2”) distance and
- Large focus

The values are approximate and may vary among the X-ray devices.

IMPORTANT:

For exposure place the cassette in length direction to the X-ray tube.

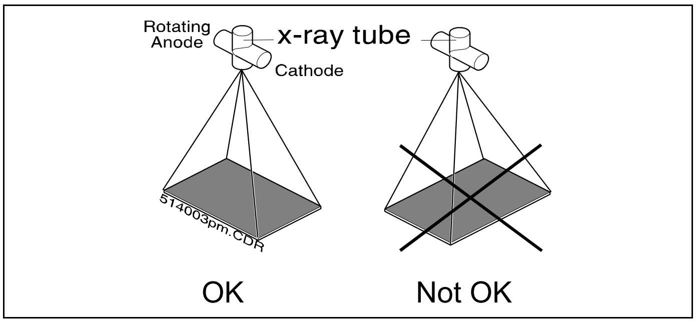

Rotating Anode
x-ray tube
Cathode
514003pm.CDR
OK
Not OK

Figure 20

The entire image plate must be fully exposed!
The collimated field must be larger than the image plate!

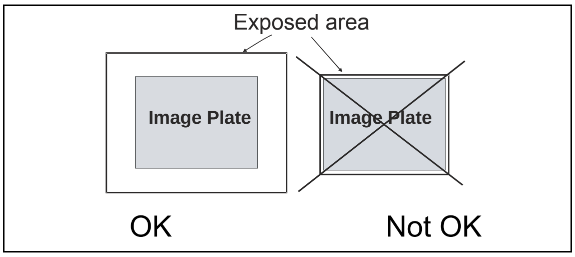

Exposed area
Image Plate
Image Plate
OK
Not OK

Figure 21

6.1.4 Scanning the Flatfield Image

(1) At the NX Workstation select examination type “System diagnosis – Flatfield”.

(2) Insert exposed cassette in the digitizer.

(3) Scan cassette and wait until the digitizer shows the ready screen.

(4) Print the image(s) or send it to the archive (depending on what is available).

6.1.5 Checking the Image at the Lightbox or Viewing Station

✓ NOTE:

Checking the image may only happen on lightboxes and viewing stations that comply with the specified installation and configuration conditions for diagnostic reading. For details refer to the respective instructions of the viewing stations / light boxes.

Check the image quality of the flatfield for stripes and large area inhomogeneities.

Result:

- If the scanned flatfield does not show stripes in fast scan or slow scan direction or large area inhomogeneities no further action is required.
- If the flatfield shows stripes in fast scan or slow scan direction or large area inhomogeneities refer to the Troubleshooting Guide, DD+DIS151.08E. See also NOTE below.

> ✓ NOTE:
>
> For external partners accessing the “Troubleshooting Guide” on MedNet, GSO Library may be restricted. In such a case please contact your local Agfa representative.

IMPORTANT:

If you use a FLFS cassette for flatfield exposure, the image will be slightly darker in the upper and lower image area where the backscatter protection is removed (approx. 1 cm each). These darker zones also have to be used for image quality evaluation in slow scan and fast scan direction.

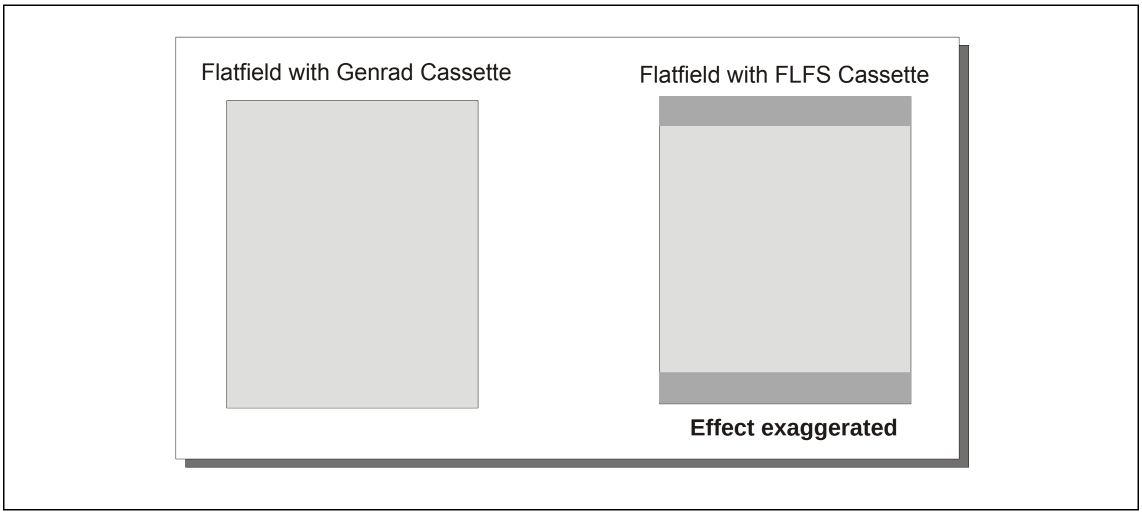

Flatfield with Genrad Cassette
Flatfield with FLFS Cassette
Effect exaggerated

Figure 22

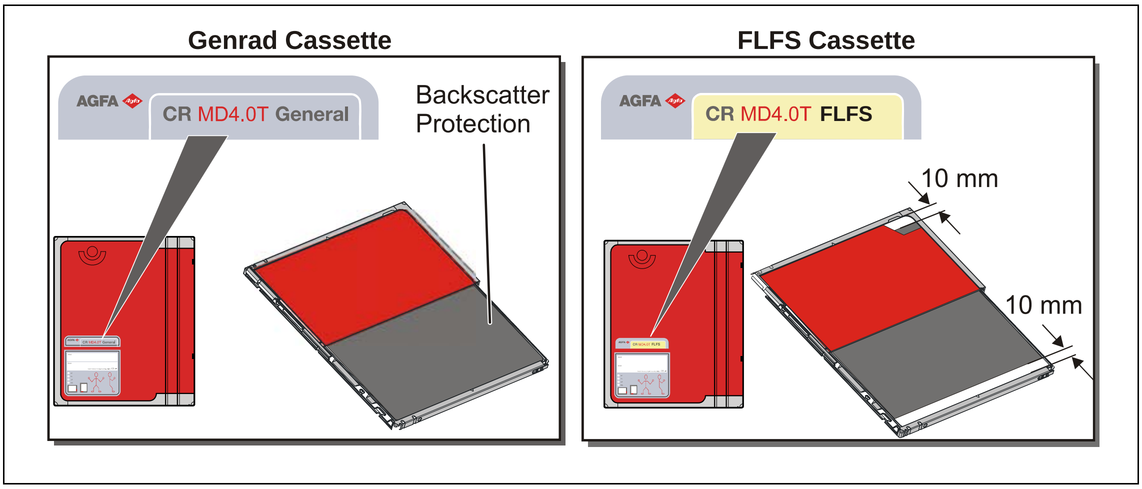

Genrad Cassette
FLFS Cassette
AGFA
CR MD4.0T General
Backscatter Protection
AGFA
CR MD4.0T FLFS
10 mm
10 mm

Figure 23: Main differences of Genrad and FLFS Cassettes

7 Completing the Digitizer Installation

The purpose of this section is to show the tasks that are required to prepare the digitizer for hand-over to the Clinical Application Specialist.

The following table lists these tasks.

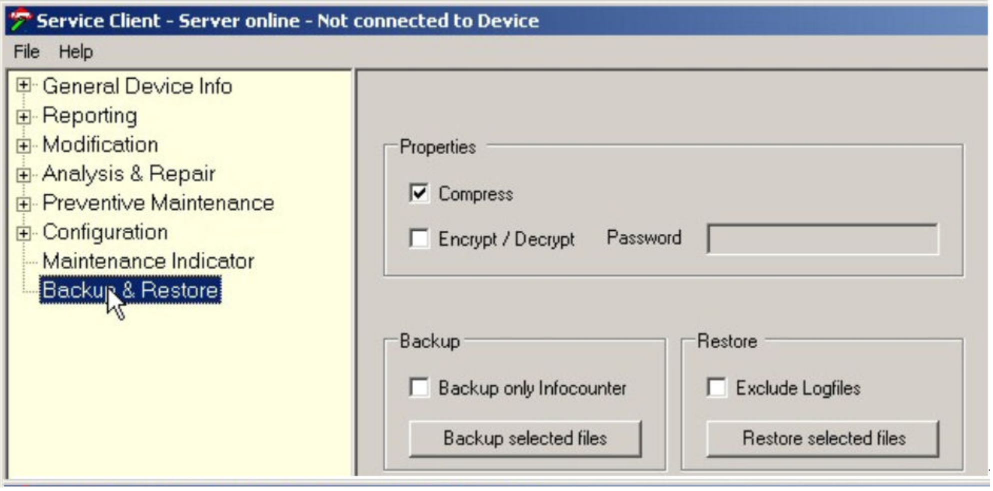
Task	Required Time	Importance	Task Code*	Section
Perform a backup.	5 minutes	mandatory	INS	7.1
Hand-over the system to the Clinical Application Specialist.	5 minutes	mandatory	INS	7.2

*Complete required time per Task Code to be entered in the Agfa repair report.

7.1 Performing a Backup

(1) In the CR 30-X service client select the menu **`<Backup & Restore>`**.

(2) Keep the default settings as shown in Figure 24.



Properties

☑ Compress

☐ Encrypt / Decrypt Password

Backup

☐ Backup only Infocounter

Restore

☐ Exclude Logfiles

Service Client - Server online - Not connected to Device
File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Backup selected files
Restore selected files

Figure 24

(3) Select the button **`<Backup selected files>`** to perform a backup.

(4) Enter the file name (e.g. **`backup_CR30-X_SN_XXXX.ZIP`**) and select the partition **`<D:\>`** of the control PC as storage place.

(5) Wait till the backup is finished (may take up to one minute).

(6) Insert a backup USB stick at the USB port of the control PC.

(7) Copy the backup file stored on the partition **`<D:\>`** on the control PC to the USB stick.

(8) Unmount and remove the USB stick from the control PC and store it on a save place.

(9) Close the service client.

(10) Answer the dialogue popping up “did you perform any repair or maintenance activities” with "No".

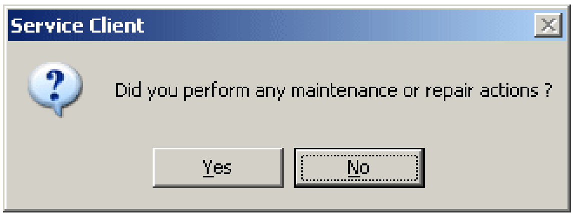

Did you perform any maintenance or repair actions ?

Figure 25

7.2 Hand-over of the System to the Clinical Application Specialist

(1) Inform the Clinical Application Specialist about:

- Completion of technical installation.
- Any irregularities during the installation.

8 Installation Checklist

#	Step	Section	Okay
Prerequisites for Installation:			
1.	Checking the Installation Site Prerequisites	2.1	☐
2.	Preparing the required Tools	2.2	☐
Inspection and Unpacking:			
3.	Checking the Packing for obvious Damage	3.1	☐
4.	Unpacking the Digitizer	3.2	☐
5.	Checking the Shipment Completeness	3.3	☐
Performing Digitizer Setup:			
6.	Mounting the Distance Holder	4.1	☐
7.	Connecting the Cables	4.2	☐
8.	Switching the Digitizer on	4.3	☐
Configuring Digitizer Settings:			
9.	Filling in of Site specific Data	5.1	☐
10.	Checking Software Version	5.2	☐
11.	Configuring Maintenance Indicator	5.3	☐
Setting the Digitizer operational:			
12.	Checking the Technical Image Quality of the System	6.1	☐
Completing the Digitizer Installation:			
13.	Performing a Backup	7.1	☐
14.	Hand-over of the System to the Clinical Application Specialist	7.2	☐

Chapter 2

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1 CR30-X Digitizer as a part of the CR 30-X System

1.1 System Overview

The CR30-X digitizer is part of the "CR 30-X System" which comprises:

- Digitizer CR30-X
- NX Workstation
- Cassette with Image Plate (IP)

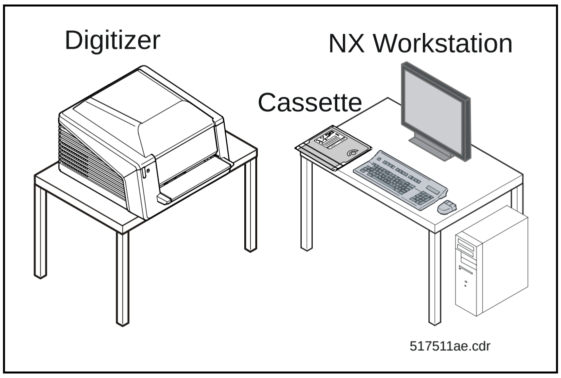

Digitizer
NX Workstation
Cassette
517511ae.cdr

Figure 1

Optional Components (not displayed)

- Printer (Drystar 5302)
- Auto QC^2 Package
- Additional Cassettes
- Uninterruptible Power Supply (UPS)

1.2 CR30-X in a Nutshell

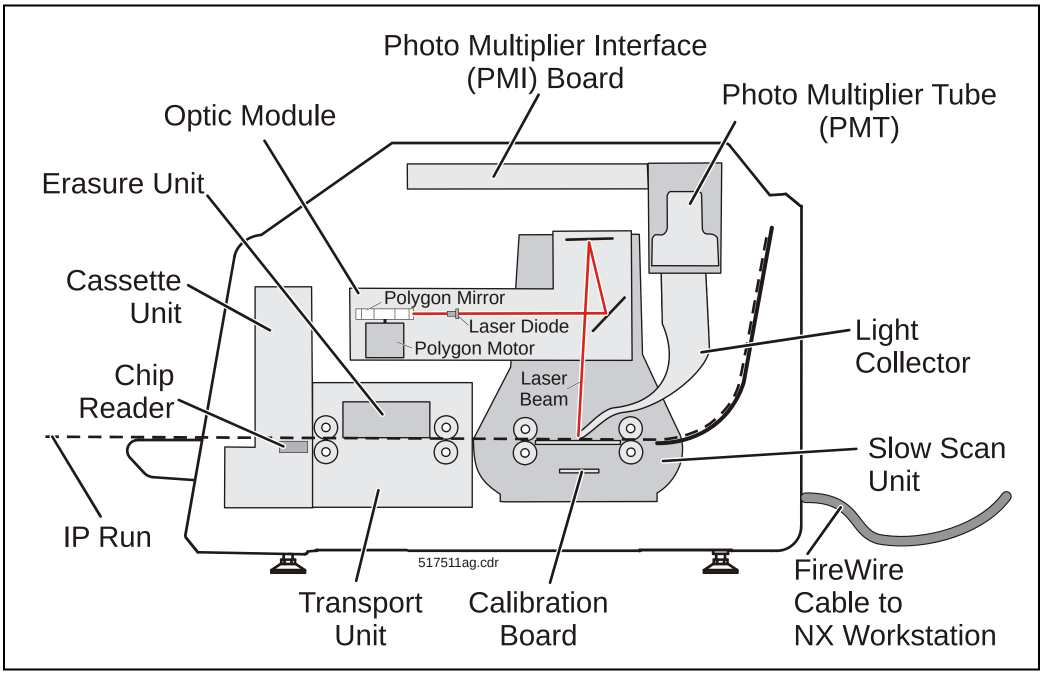


Photo Multiplier Interface (PMI) Board
Optic Module
Photo Multiplier Tube (PMT)
Erasure Unit
Cassette Unit
Polygon Mirror
Laser Diode
Polygon Motor
Chip Reader
Laser Beam
Light Collector
Slow Scan Unit
IP Run
517511ag.cdr
Transport Unit
Calibration Board
FireWire Cable to NX Workstation

Figure 2: CR30-X general Structure

Explanation of one scan cycle:

1) The user inserts the cassette with image plate (IP) into the digitizer
2) The chip reader reads the image plate data
3) The user enters the patient data at the the NX workstation and selects the ID button to send the data to the digitizer
4) The cassette unit opens the cassette and pulls out the tray with IP
5) The transport unit drives the image plate to the slow scan unit
6) Via calibration board the digitizer determines the position of the polygon mirror to synchronize scanning and digitizing.
7) The laser beam which is generated in the optic module scans the image plate, while the slow scan unit drives the image plate
8) The blue emitted light is collected by the light collecter
9) The PMT converts light to current, which is converted to digital pixels by the PMI board.
10) The digital image data are sent via FireWire Interface to the NX workstation
11) The image plate is driven back by slow scan unit and transport unit to the erasure unit: Several LED arrays erase the image plate.
12) The tranport unit puts the image plate back into the tray, and pushes the image plate with tray into the cassette.
13) The cassette unit closes the cassette.
14) The red blinking LED at the front panel changes to green, indicating that the scan cycle is finished.
15) The user removes the image plate for the next exposure.

1.3 NX Workstation in a Nutshell

The NX Workstation is a WIN2003 Server or WIN XP based Processing Station with the NX software installed.

Every incoming image runs through an image processing (MUSICA).

The processed images are stored on the internal hard disk of the NX Workstation. However, the NX Workstation can only provide a limited amount of storage capacity. The final archiving must be realized either by printed hardcopies or a PACS.

Moreover, the NX Workstation decodes the routing data and sends the image data to the selected destinations (e.g. Printer, PACS).

For the NX Workstation a lot of licensed software options (e.g. Interactive Image Processing, Annotation, Smart Print, etc.) can be purchased.

The CR30-X cannot be run together with ADC QS workstations.

1.4 Image Plates with IPs in a Nutshell

The cassettes are similar to the DX-S digitizer cassettes, however not compatible.

The IPs are named "MD40" (MD = media definition; 40 = version).

These are flexible IPs that are also used in the previous digitizers, except DX-S.

The tray is used as carrier to pull out the image plate and put it back into the cassette. The tray only leaves the cassette for approx. 3 cm.

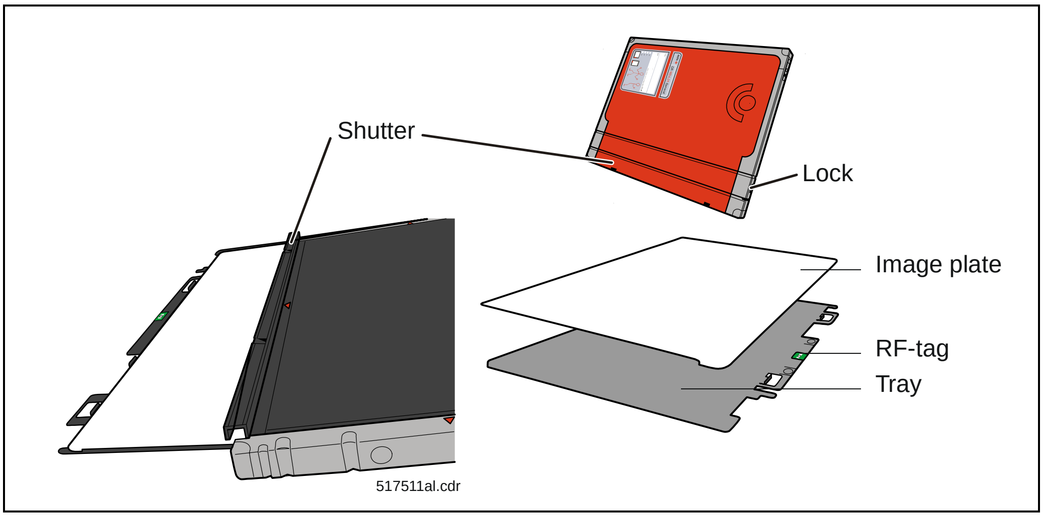


Figure 3: CR30-X Cassette with Image Plate "MD40"

2 Workflow of the CR 30-X System

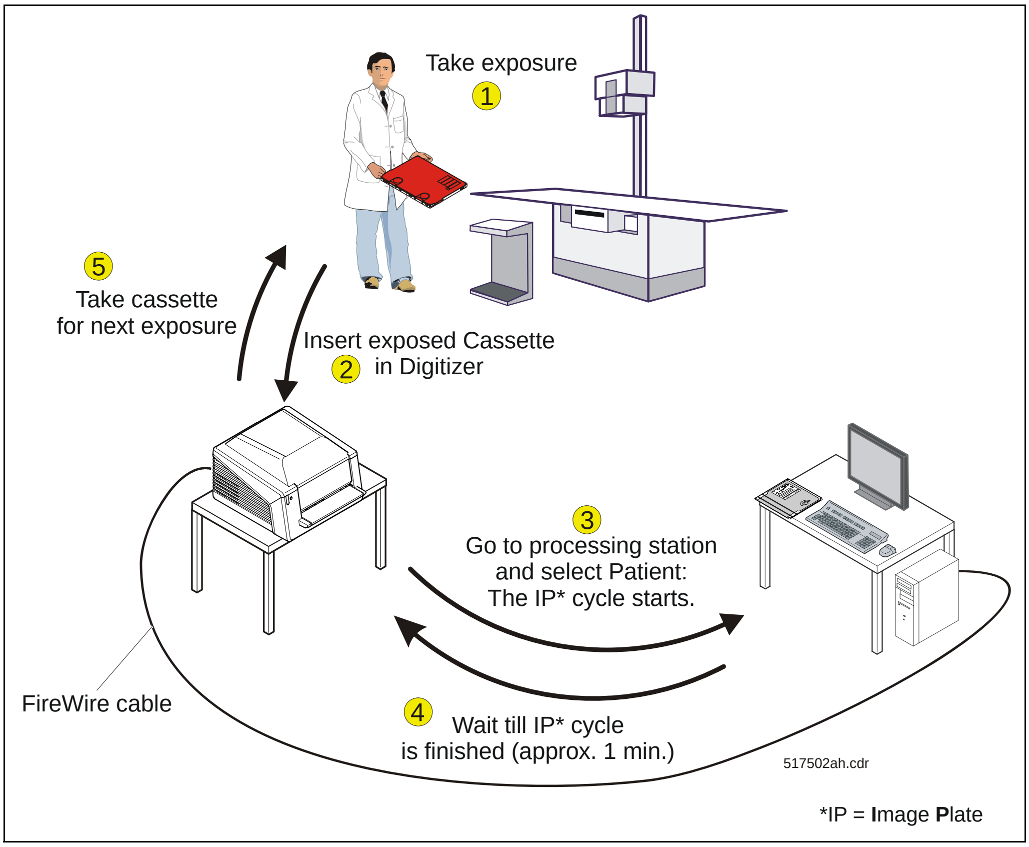

Take exposure
1
5
Take cassette
for next exposure
Insert exposed Cassette
2 in Digitizer
3
Go to processing station
and select Patient:
The IP* cycle starts.
FireWire cable
4 Wait till IP* cycle
is finished (approx. 1 min.)
517502ah.cdr
*IP = **I**mage **P**late

Figure 4

Workflow of an examination with the CR30-X system in the view of a radiologic technologist:

Step 1:	Take the exposure.
Step 2:	Insert the exposed cassette into the digitizer
Step 3:	Go to processing station. Select the patient from the worklist and select the "ID" button (ID stands for "identify"): The IP* cycle starts.
Step 4:	Wait till the IP* cycle is finished. This takes approx. 1 min. The digitizer sends the image data during scanning (i.e. during the IP cycle) to the processing station.
Step 5:	Take out the cassette for the next examination.

*IP = **I**mage **P**late

3 Hardware and Software

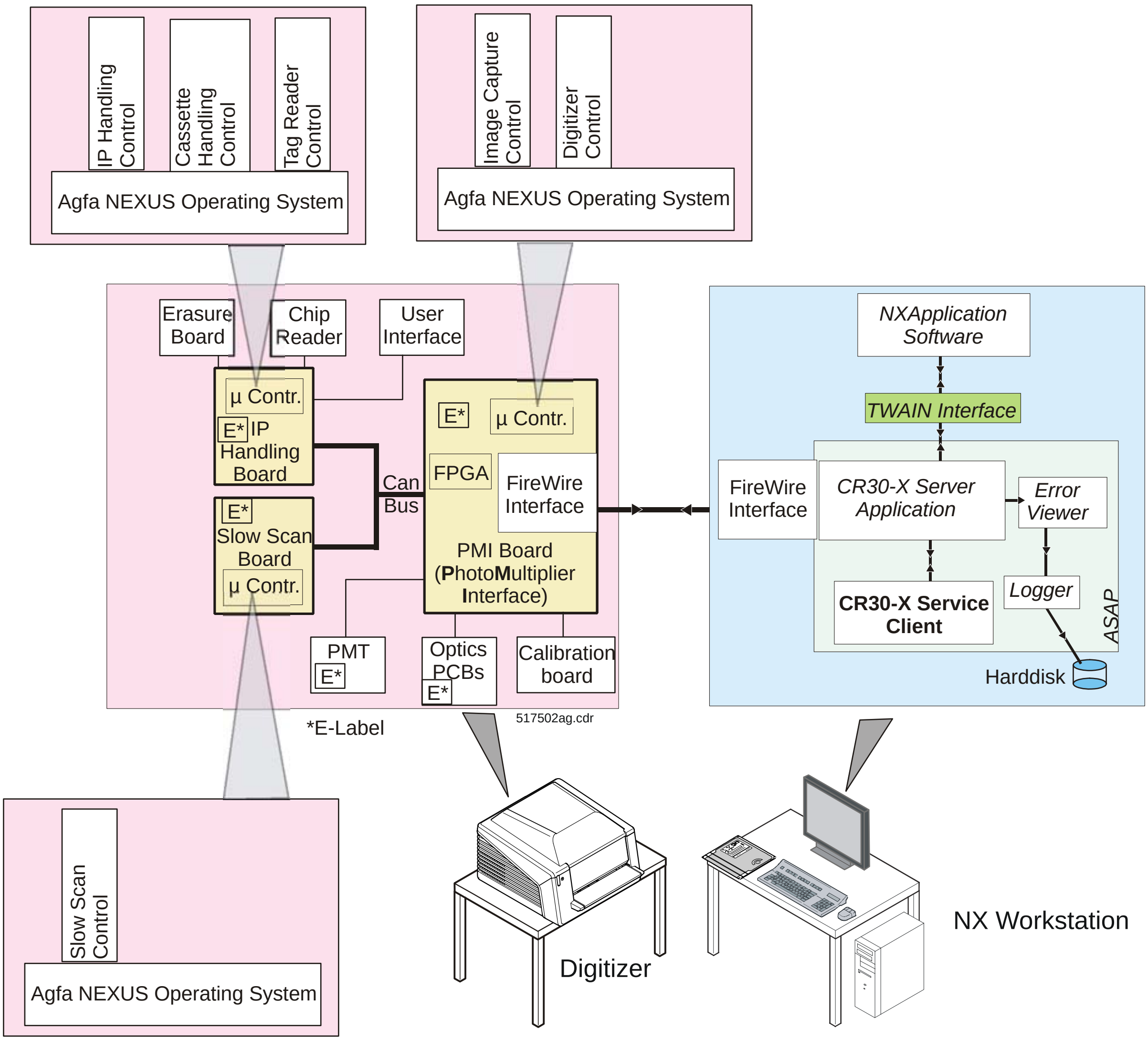
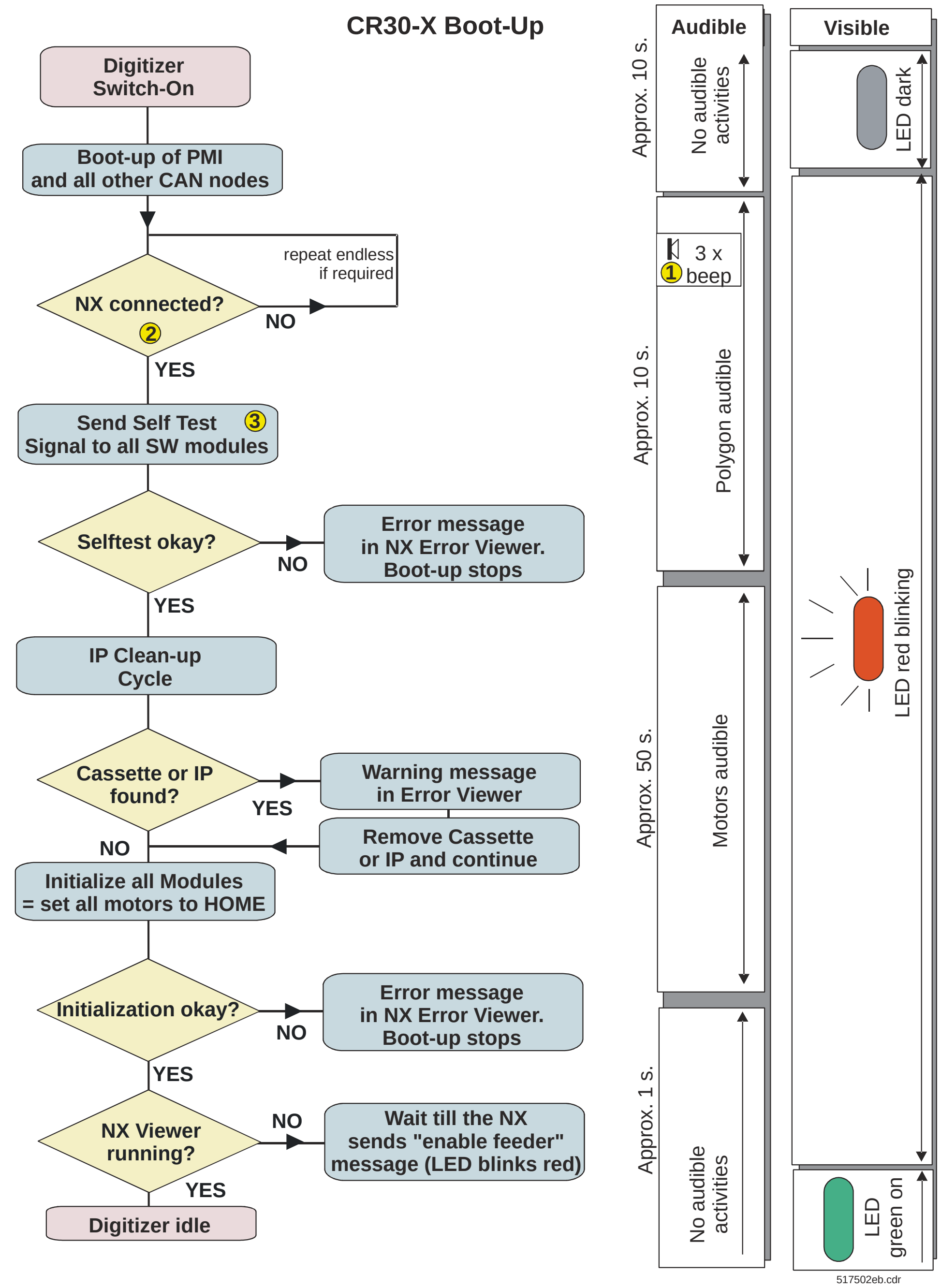

IP Handling Control
Cassette Handling Control
Tag Reader Control
Agfa NEXUS Operating System
Image Capture Control
Digitizer Control
Agfa NEXUS Operating System
Erasure Board
Chip Reader
User Interface
µ Contr.
E* IP Handling Board
E* Slow Scan Board
µ Contr.
Can Bus
E*
µ Contr.
FPGA
FireWire Interface
PMI Board (PhotoMultiplier Interface)
PMT
E*
Optics PCBs
E*
Calibration board
*E-Label
517502ag.cdr
NXApplication Software
TWAIN Interface
FireWire Interface
CR30-X Server Application
Error Viewer
CR30-X Service Client
Logger
ASAP
Harddisk
Slow Scan Control
Agfa NEXUS Operating System
Digitizer
NX Workstation

Figure 5

4 Digitizer Boot-Up


CR30-X Boot-Up
Digitizer Switch-On
Boot-up of PMI and all other CAN nodes
repeat endless if required
NX connected? ②
NO
YES
Send Self Test ③ Signal to all SW modules
Selftest okay?
NO
Error message in NX Error Viewer. Boot-up stops
YES
IP Clean-up Cycle
Cassette or IP found?
YES
Warning message in Error Viewer
Remove Cassette or IP and continue
NO
Initialize all Modules = set all motors to HOME
Initialization okay?
NO
Error message in NX Error Viewer. Boot-up stops
YES
NX Viewer running?
NO
Wait till the NX sends "enable feeder" message (LED blinks red)
YES
Digitizer idle
Audible
Visible
Approx. 10 s.
No audible activities
LED dark
3 x ① beep
Approx. 10 s.
Polygon audible
LED red blinking
Approx. 50 s.
Motors audible
Approx. 1 s.
No audible activities
LED green on
517502eb.cdr

Legend:

① 3 x beep indicates: PMI + CAN nodes are started up.

② Connection only possible if
- FireWire cable connected
- ASAP service on NX started.

③ SW Modules:
- Image Capture Control
- Cassette Handling Control
- IP Handling Control
- Slow Scan Control

This selftest is without motor actvities (except polygon).
It checks e.g. whether motors and sensors are connected.

Figure 6

5 Scanning

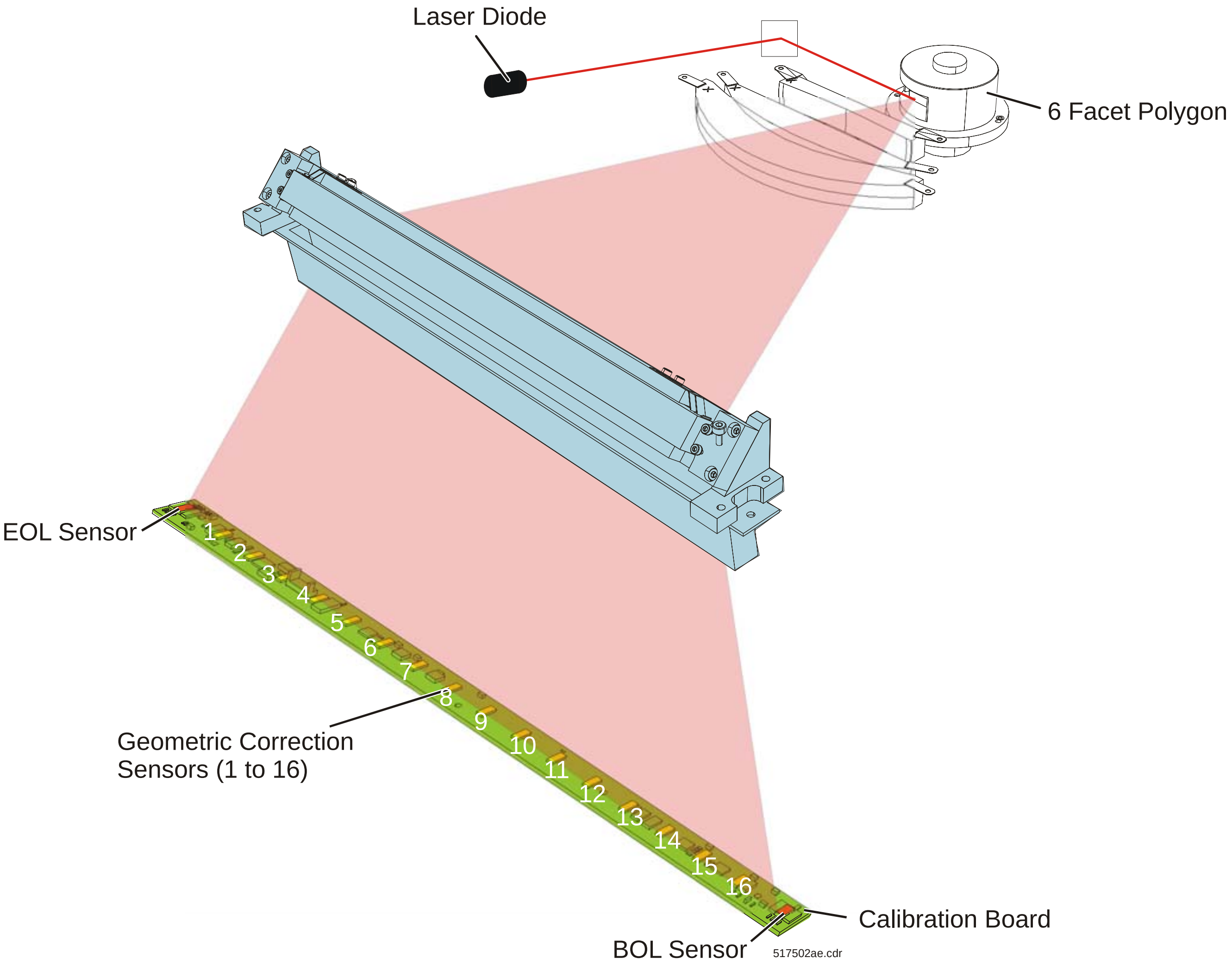

Laser Diode
6 Facet Polygon
EOL Sensor
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Geometric Correction Sensors (1 to 16)
Calibration Board
BOL Sensor
517502ae.cdr

Figure 7

5.1 Description of most important Components for Scanning:

Laser Diode:

- Power $_{max}$ = . 45 mW

Polygon:

- 6 facets
- Ball bearings
- Run-up period approx. 5 sec.
- Follow-up period approx. 10 min.

Calibration Board

- BOL / EOL Sensor
- 16 pin diodes

5.2 Functions of Calibration Board:

- **Geometric Correction:**

To correct irregularities in the optical path, the digitizer measures at each boot-up the timings of the laser beam between pin diode 1 and 2, 2 and 3 and so on.

As a result a kind of "calibration curve" is created, which influences the frequency of AD conversion. This corrects possible distortions.

- **Jitter Correction:**

To correct irregularities in the polygon run, the digitizer measures the timings between the BOL and EOL signal during each scan. Certain irregularities, which may be caused by external vibrations or the polygon ball bearings are smoothed by calculating mean values of several scan lines.

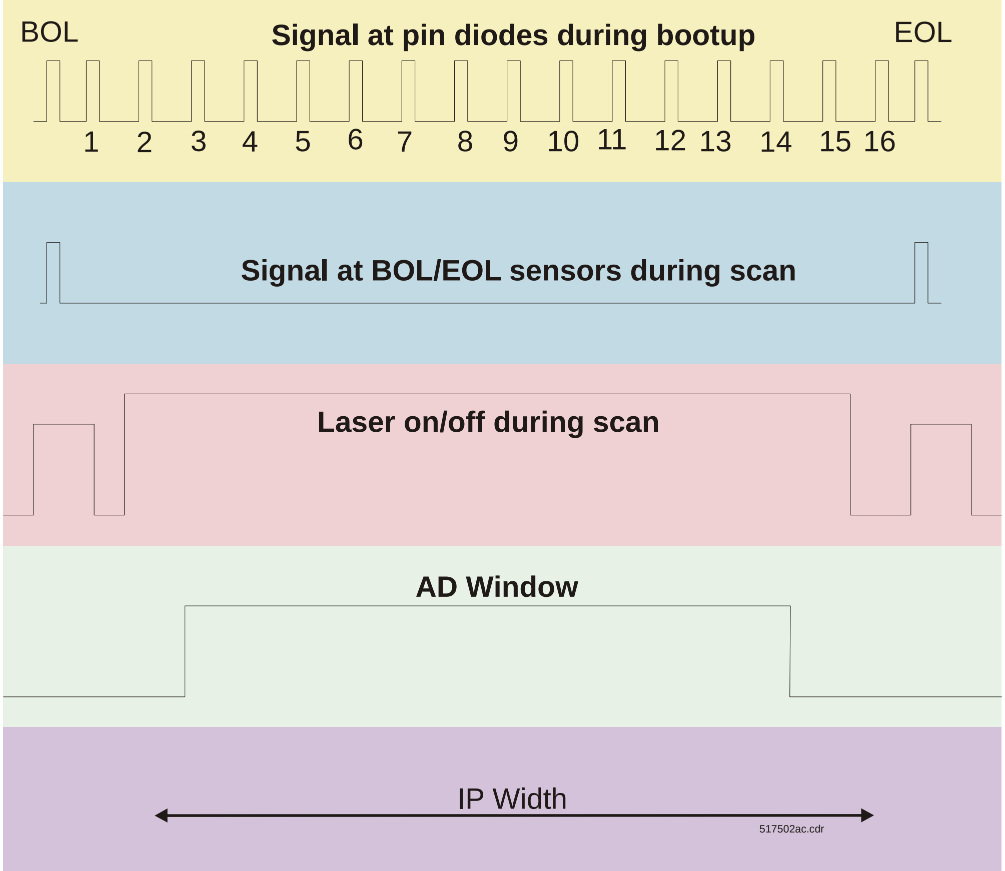
- **Synchronization of Polygon, Begin of Scan, Begin of Line and AD Window:**

When an IP is inserted the polygon starts up. The BOL/EOL sensors measure the position of the polygon mirrors (they even detect each single facet)

When the IP arrives for scanning, the sensors of the calibration board detect the IP edge and generate the begin of scan signal (BOS).

The begin of line signal (BOL) triggers a timer for switching on the laser beam and the AD window.

The length of the AD window and "Laser On" depends on the image plate size.


BOL
Signal at pin diodes during bootup
EOL
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Signal at BOL/EOL sensors during scan
Laser on/off during scan
AD Window
IP Width
517502ac.cdr

Note: *Timings are unproportional distorted to show correlation between different signals*

Figure 8

5.3 Signal Corrections before and during Scan

Introduction:

To compensate PMT sensitivity irregularities due to the previously collected light, the light collector has a blue LED built in.

This blue LED creates a reference signals (REF LUM) before and during scan, to correct the sensitivity of the PMT "on the fly" (HT correction).

Calibration of the "PMT - Light Collector System" at Production:

STEP 1: Adjusting blue LED

The blue LED is adjusted by the PMT electronics at initialization of the system this way, that a defined output signal (LPV = Linear Pixel Value) is reached. The voltage at the blue LED to reach the value is stored in the PMT EEPROM as REF LUM value.

Parameters of REF LUM: Variations of LEDs; LED mounting position.

STEP 2: Determination of translucence of the system

An IP with 20µG is scanned by the system. The exact dose is measured by production people and entered in the system. The analog output signal at the PMT is measured by the system, put into a relation to the entered dose and stored in the PMT EEPROM as REF CAL value.

Parameters of REF CAL: Overall translucence of light collector incl. PMT sensitivity

STEP 3: Shading calibration

An IP with 20µG is scanned. A reference value for each pixel of each line and each polygon facet is stored in the PMT Flash ROM.

Parameters: Translucence of Lightcollector - PMT system per pixel on the scan line.

⇒ Signal corrections before scan: AUTOZERO

With laser and blue LED switched off, the system measures the output of the PMT. This value is the AUTOZERO value.

Parameters: Noise of the PMT electronics; Remaining light

→ Error message if AUTOZERO value exceeds certain limit (e.g. covers opened)

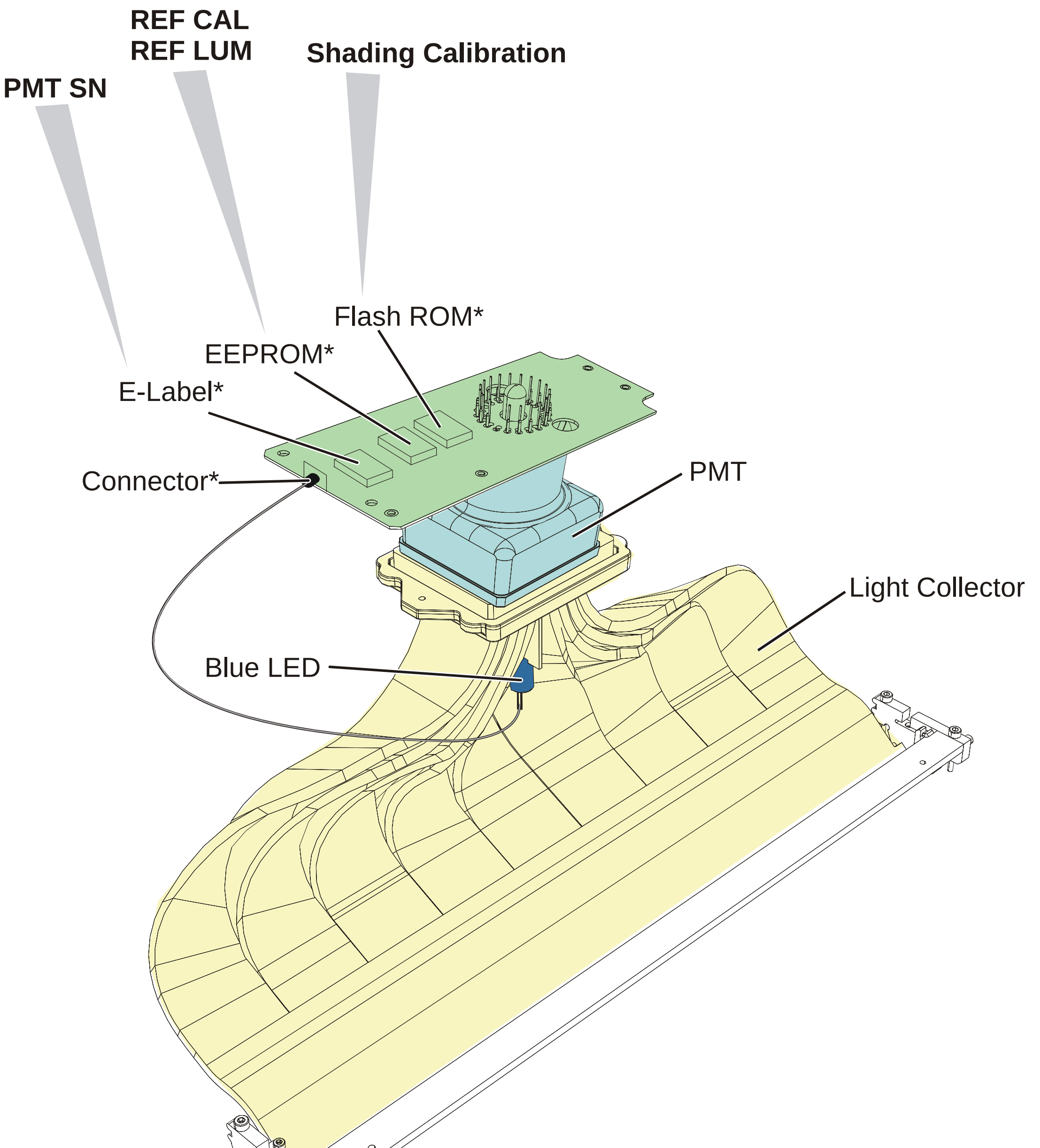
⇒ Signal corrections during scan: AUTOCAL and Shading Correction

AUTOCAL Correction:

During laser blank time, till the next facet scans a line, the blue LED is switched on to measure the sensitivity of the PMT. By combining the measured values of several lines the sensitivity is automatically adjusted (HT at PMT)

Shading correction:

The digital value of each pixel is corrected with a correction factor determined during shading calibration.


REF CAL
REF LUM
Shading Calibration
PMT SN
Flash ROM*
EEPROM*
E-Label*
Connector*
PMT
Light Collector
Blue LED
517502ad.cdr

*Location of Connector, E-Label, EEPROM and Flash ROM simplified

Figure 9

6 Stall Detection

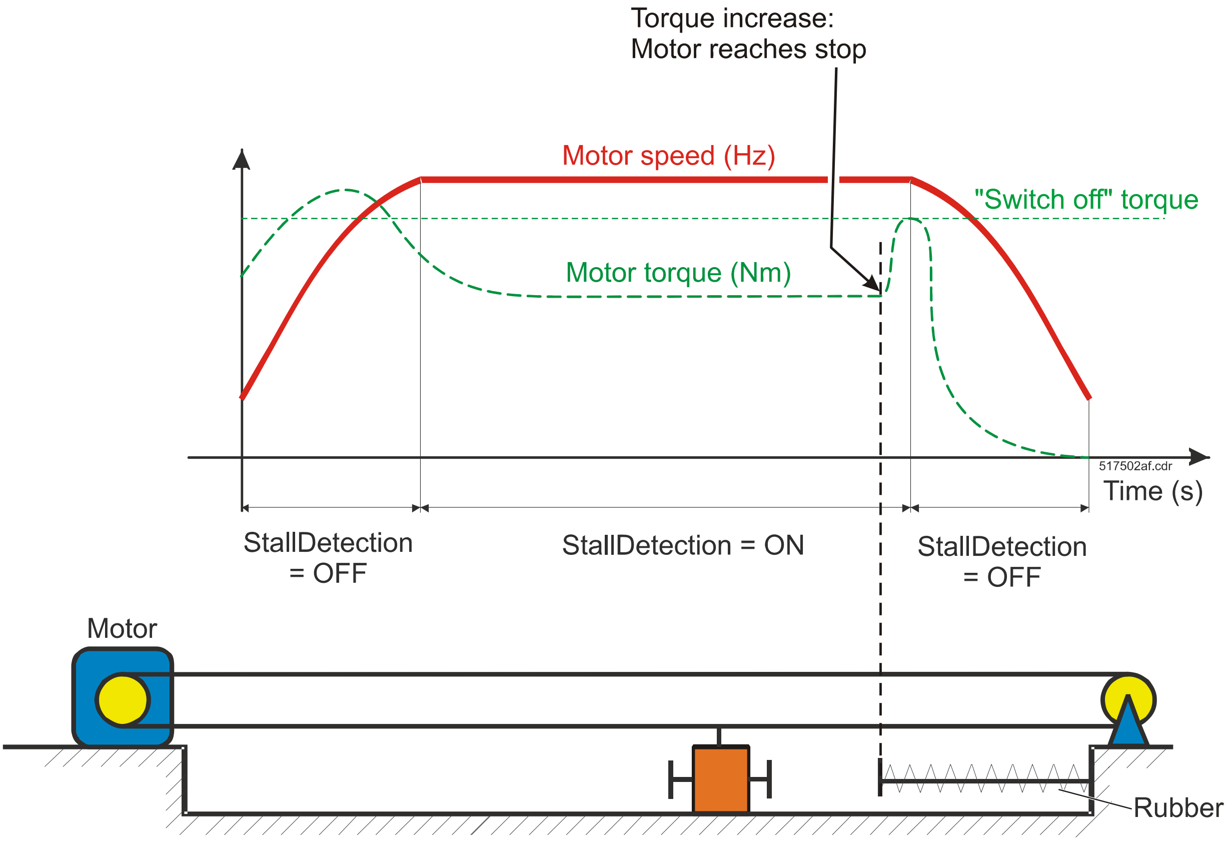

Torque increase:
Motor reaches stop
Motor speed (Hz)
"Switch off" torque
Motor torque (Nm)
517502af.cdr
Time (s)
StallDetection = OFF
StallDetection = ON
StallDetection = OFF
Motor
Rubber

Figure 10

Stall detection =

- Motor stall (home/end position) detection without the use of additional sensors
- Made by evaluation of stepper motor control curve on the motor controller chip

Advantage compared to home/end position detection via light sensors:

- Monitoring of motor run not only in home and end position, but also between home and end position (except acceleration / deceleration time)
- Less sensors (costs, reliability) and cabling (costs).

How does it work in general:

- When the stepper motor is accelerating the stall detection is switched off, as torque differs to much during acceleration.
- When the motor reaches a stable speed, e.g. after 200 steps, the stall detection is active for a number of steps, e.g. 5000 steps: The motor control curve is evaluated by the motor controller chip.

- When the torque increases and reaches a certain "switch off torque", as the motor reaches the end position, the motor controller detects the stall position and drives the motor a certain number of steps (e.g. 50 steps) till it stops.
- During decelration time the stall detection is switched off, as torque differs to much during deceleration.
- Rubber pieces in the end position support that the motor can be driven with relatively high speed towards the end position.
- If the torque increases to the "switch-off" torque before the motor is supposed to reach the stall position, the motor is also stopped. The software however "knows" that this stop comes too early and issues an error message (e.g. "IP jam").

✓

NOTE:

The motor curves shown above are simplified. In reality the motor speed can be reduced just before the stall position, or can even be reduced in several steps before it stops.

Chapter 2

Software / Hardware Compatibility

Document No: DD+DIS125.08E

CR 30-X

Type 5175/100/105/110/120/125

► **Please note**

The chapter “Software / Hardware Compatibility” has been replaced by following documents:

- Solution Structure Data Document, Document ID* 30781759 (Intranet Link / Extranet Link)
- CR/DR Interoperability Matrix, Document ID* 31333326 (Intranet Link / Extranet Link)

* Access the document by entering the document ID in the Agfa HealthCare Library search window, or follow the direct link.

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Edition 1, Revision 6
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Document No: DD+DIS150.06E

CR 30-X

Type 5175 /100/110

► Purpose of this Document

This document describes the product specific safety notes of the digitizer.

► Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.0
1.1	04-2009	Adapted description about labels in the rear of the device. See section 2.

► Referenced Documents

Document	Title
n.a.	n.a.

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► Manufacturer

Agfa HealthCare N.V.

Publisher

Agfa-Gevaert HealthCare GmbH
Tegernseer Landstraße 161
D - 81539 München
Germany

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type 'Order List' in the GSO library.

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3 SAFETY NOTES FOR SERVICE ACTIVITIES 8
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1 Intended Use

This device must only be used to scan exposed X-ray cassettes, containing an erasable image plate (IP). The digitizer is part of a system, consisting of X-ray cassettes with erasable phosphor image plates and a workstation where the X-ray cassettes are identified and the resulting digital image information is further processed and routed. It is intended that this device is only operated in a radiological environment by qualified staff.

2 Labels in and on the Device

WARNING:
Risk of hand injuries if cassette edge sensor is activated and hand or finger is inserted in cassette entry.

- Keep fingers / hand away from cassette unit entry when a cassette is inserted.
- Do not activate cassette edge sensor by hand.

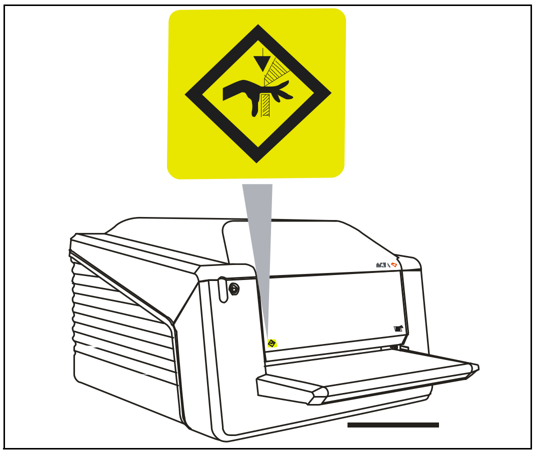


Figure 1: Labels in the Front

NOTE:
One sticker on the front cover indicates the correct cassette positioning when inserting the cassette.

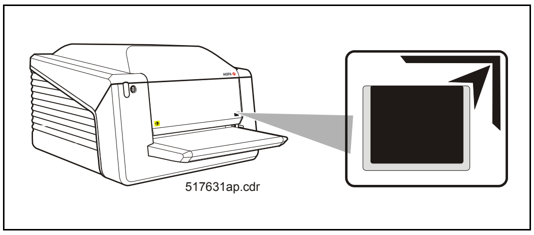
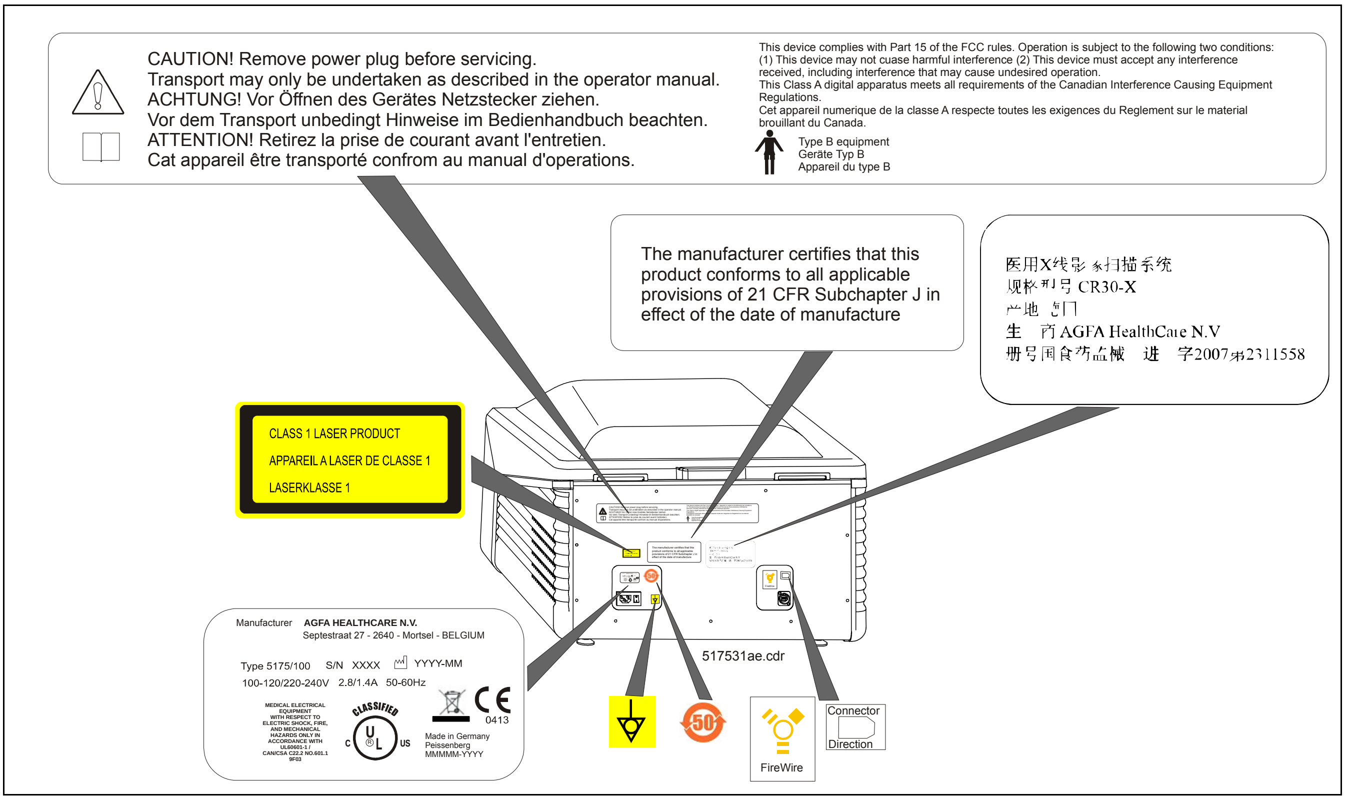


Figure 2


CAUTION! Remove power plug before servicing.
Transport may only be undertaken as described in the operator manual.
ACHTUNG! Vor Öffnen des Gerätes Netzstecker ziehen.
Vor dem Transport unbedingt Hinweise im Bedienhandbuch beachten.
ATTENTION! Retirez la prise de courant avant l'entretien.
Cat appareil être transporté confrom au manual d'operations.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cuase harmful interference (2) This device must accept any interference received, including interference that may cause undesired operation.
This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.
Cet appareil numerique de la classe A respecte toutes les exigences du Reglement sur le material brouillant du Canada.

Type B equipment
Geräte Typ B
Appareil du type B

The manufacturer certifies that this product conforms to all applicable provisions of 21 CFR Subchapter J in effect of the date of manufacture

医用X线影像扫描系统
规格型号 CR30-X
产地 德国
生产商 AGFA HealthCare N.V
册号国食药监械 进 字2007第2311558

CLASS 1 LASER PRODUCT
APPAREIL A LASER DE CLASSE 1
LASERKLASSE 1

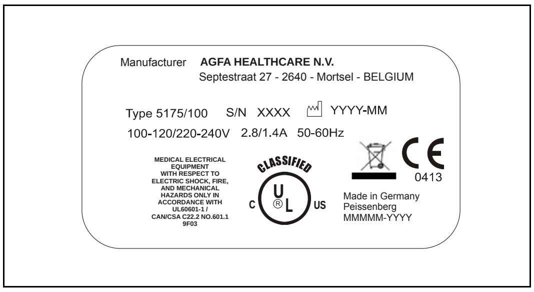
Manufacturer **AGFA HEALTHCARE N.V.**
Septestraat 27 - 2640 - Mortsel - BELGIUM
Type 5175/100 S/N XXXX YYYY-MM
100-120/220-240V 2.8/1.4A 50-60Hz
MEDICAL ELECTRICAL EQUIPMENT WITH RESPECT TO ELECTRIC SHOCK, FIRE, AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL60601-1 / CAN/CSA C22.2 NO.601.1 9F03
Made in Germany
Peissenberg
MMMMM-YYYY

Figure 3: Labels in the rear

NOTE:

The type label is located in the rear. It shows

- Manufacturer
- Type number
- Serial number
- Input voltage, current and frequency
- Production date
- Production site
- Information about certificates (CE label etc.)


Manufacturer **AGFA HEALTHCARE N.V.**
Septestraat 27 - 2640 - Mortsel - BELGIUM
Type 5175/100 S/N XXXX YYYY-MM
100-120/220-240V 2.8/1.4A 50-60Hz
MEDICAL ELECTRICAL EQUIPMENT WITH RESPECT TO ELECTRIC SHOCK, FIRE, AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL60601-1 / CAN/CSA C22.2 NO.601.1 9F03
Made in Germany
Peissenberg
MMMMM-YYYY

CLASSIFIED
c UL us
CE
0413

Figure 4

WARNING:
Risk of electrical shock if supplementary earth connector is disconnected with one hand and the other hand touches a ground connection (e.g. rear cover of the digitizer).

First switch off the digitizer and remove the mains cable before you remove the supplementary earth connector.

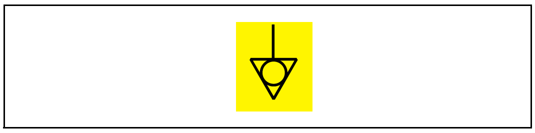


Figure 5

NOTE:

With covers closed the digitizer is a Class 1 laser product and not dangerous to the human eye or skin.

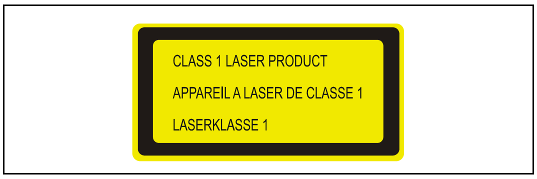

CLASS 1 LASER PRODUCT
APPAREIL A LASER DE CLASSE 1
LASERKLASSE 1

Figure 6

CAUTION:
Risk of damage of the PMI board if FireWire connector is inserted wrong.

Insert the FireWire connector in the rear as indicated on the sticker.

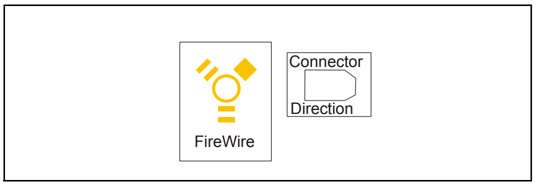

FireWire
Connector
Direction

Figure 7

WARNING:

The erasure unit is hot - up to 200 °C: Risk of burns.

Avoid contact with the Erasure Unit.

Observe the relevant sticker on the Erasure Unit.

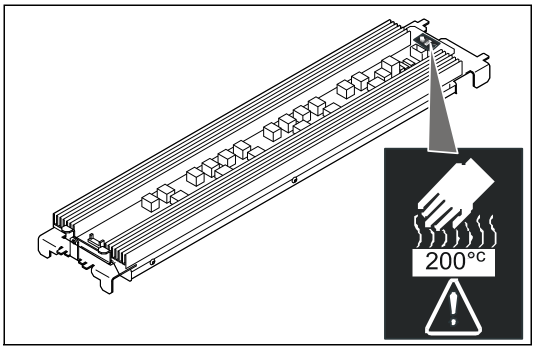


Figure 8

WARNING:

Improper ground connections inside the device may lead to electric shocks.

Make sure, that the grounding connection to the digitizer frame is present.

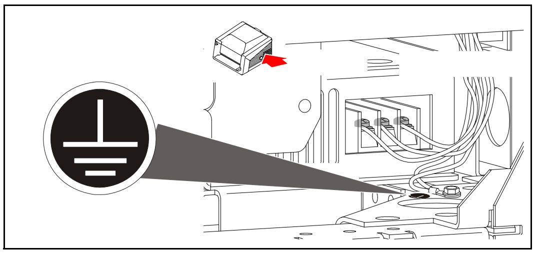


Figure 9

WARNING:
80 mW Laser (Class 3B) in the OPTIC MODULE may cause eye injuries.

- Avoid direct and indirect eye contact.
- Do not keep tools in the laser beam when the device is switched on or the CASSETTE UNIT OPEN SAFETY SWITCH is overridden with a service key: Risk of reflection.
- Do not open the cover of the OPTIC MODULE.

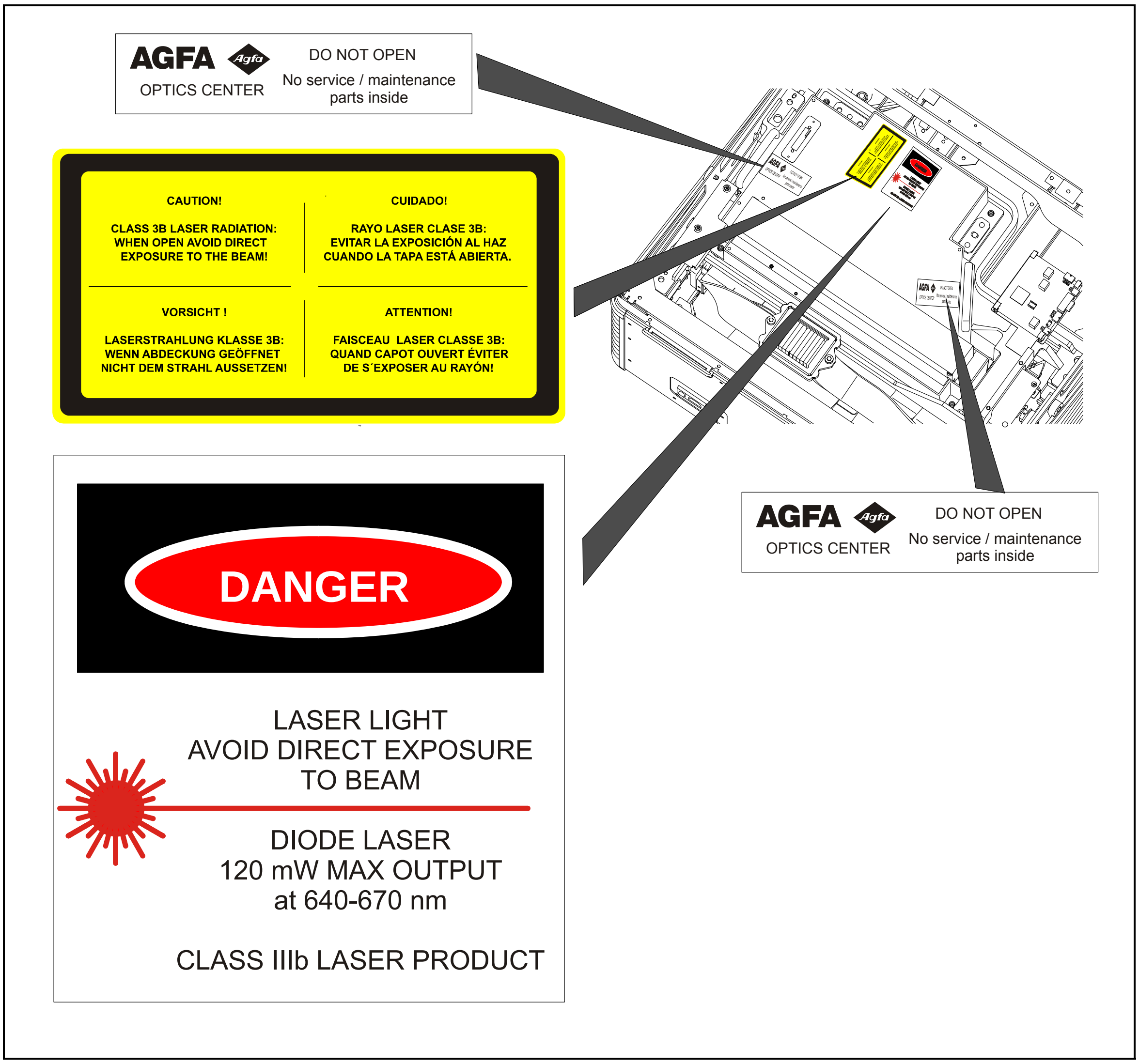

AGFA Agfa
OPTICS CENTER
DO NOT OPEN
No service / maintenance parts inside
CAUTION!
CLASS 3B LASER RADIATION: WHEN OPEN AVOID DIRECT EXPOSURE TO THE BEAM!
CUIDADO!
RAYO LASER CLASE 3B: EVITAR LA EXPOSICIÓN AL HAZ CUANDO LA TAPA ESTÁ ABIERTA.
VORSICHT !
LASERSTRAHLUNG KLASSE 3B: WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN!
ATTENTION!
FAISCEAU LASER CLASSE 3B: QUAND CAPOT OUVERT ÉVITER DE S´EXPOSER AU RAYÓN!
DANGER
LASER LIGHT
AVOID DIRECT EXPOSURE
TO BEAM
DIODE LASER
120 mW MAX OUTPUT
at 640-670 nm
CLASS IIIb LASER PRODUCT
AGFA Agfa
OPTICS CENTER
DO NOT OPEN
No service / maintenance parts inside

Figure 10

3 Safety Notes for Service Activities

3.1 Safety Notes for Installation Planning

Warning:

Image plate is sensitive for X-rays. Poor image quality possible.

The digitizer and the cassette storage shall be protected against X-ray radiation this way, that the annual dose equivalent at the installation place will not exceed 1 mSv.

WARNING:
Excessive vibrations during scanning may decrease image quality.

The structure and stability of the table used, need to be suitable in relation with the size and weight of the system. The table may not be subject to excessive shock and vibrations from other sources.

WARNING:
The digitizer uses high voltage. Electrical shock possible.

- A ground fault interrupter (GFI) (I_N = 30 mA) must be installed at a suitable point in the circuit (in compliance with VDE 664).
- Ensure that there is either a mains plug or an all-cable disconnecting device in the internal installation fitted near the digitizer and that it is easily accessible.

WARNING:
Vibrations caused by transport in a truck (mobile usage) or earthquakes may cause that the digitizer falls off the table.
During transport in a truck for mobile usage and at installations in earthquake areas the digitizer has to be secured by the optional Wall Fixation Kit. See chapter 11, Installation Planning, section "Accessories".

3.2 Safety Notes for Installation

WARNING:

The digitizer is heavy (98 kg; 216.1 lb). Risk of injuries when lifting the digitizer.

- At least three people have to lift the digitizer from one position to the other.
- Use proper shoe and hand protection when lifting the digitizer.

3.3 Safety Notes for preventive and corrective Maintenance Work

This section lists all safety notes for corrective and preventive maintenance.

3.3.1 General Safety Note for all Service Actvities

CAUTION:

Sharp edges inside the digitizer: Cut or abrasion possible.

Be careful at maintenance and replacement of parts.

CAUTION:

Risk of injuries if the cassette unit open safety switch is overridden with a service key.

In this case keep your hands and garment away from the digitizer.

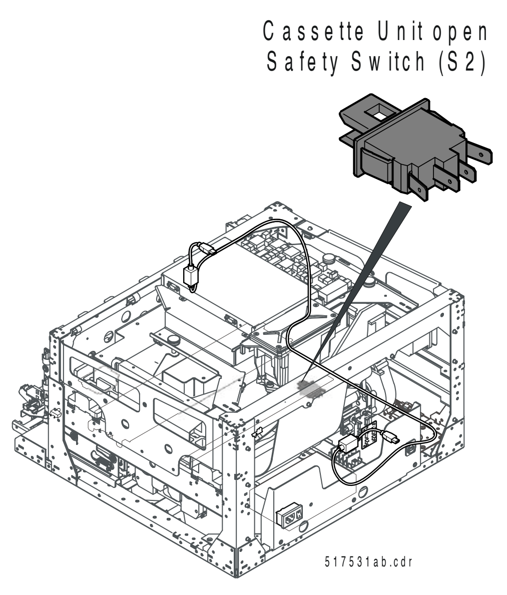


Figure 11

3.3.2 Safety Note for Replacement of the Power Supply

DANGER:

If the cables at the input side of the power supply are mounted wrong, the housing of the digitizer can be connected to high voltage. Risk of live.

Mount the cables at the power supply as indicated in the replacement instructions.

3.3.3 Safety Note for Replacement of Cassette Edge Sensor

CAUTION:

The nuts of the cassette edge sensor mounting can be lost very easily.

- Only loosen the screws of the CASSETTE EDGE SENSOR approx. 2 turns.
- Always have a "small parts kit" CM+9 5175 9070 0 with you: This contains 2 screws and nuts for the cassette edge sensor mounting.

3.3.4 Safety Note for Replacement of PMT with Light Collector

CAUTION:

The light collector can break when mechanically stressed.

Handle the light collector with great care.

3.3.5 Electrical Check after Power Supply Replacements

WARNING:

Improper ground connection of the digitizer metal housing may lead to electric shocks.

In case of power supply replacements or maintenance check the protective earth resistance according to the national regulations.

The electrical check is split up in two steps:

Step	Task	Section Reference
1	Perform the basic protective earth test.	3.3.5.1
2	Perform the electrical check according to National Regulations.	3.3.5.2

3.3.5.1 Basic Protective Earth Test

(1) Use a multimeter that is capable to measure a resistance < 1 Ohm

(2) Put one probe at the ground connector of the mains input

(3) Put the other probe at a few metallic parts, the customer could touch.
The electrical resistance has to be ≤ 0.2 Ohm.
Refer to Figure 12.

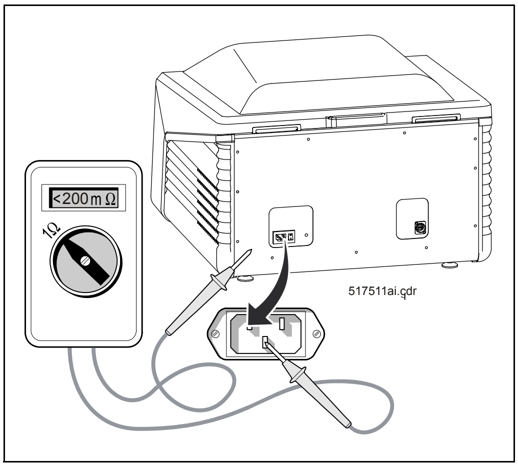


Figure 12

(4) Insert the power cord at the digitizer side; leave it disconnected at the wall side.

(5) Put one probe at the ground connector of the mains connector.

(6) Put the other probe at a few metallic parts, the customer could touch.
The electrical resistance in this case has to be ≤ 0.3 Ohm.
Refer to Figure 13.

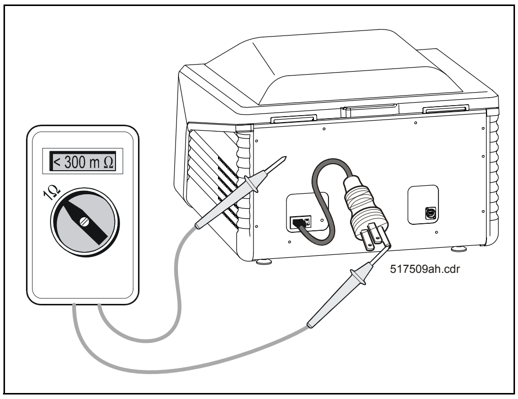


Figure 13

IMPORTANT:
In case the electrical resistance of one measurement exceeds the limits (0.2 Ohm without mains cable; 0.3 Ohm with mains cable) check the digitizer for loose grounding connections!

3.3.5.2 Electrical Check according to National Regulations

(1) Perform the electrical check according to National Regulations.

IMPORTANT:

The electrical checks that have to be performed in certain intervals (e.g. each 12 months) or after certain service actions (repair and/or maintenance) depend on National Regulations.

Example for Germany: BGV A3 and DIN VDE 0751 or subsequent regulations.

Document No: DD+DIS150.06E

CR 30-X

Type 5175 / 100/110

► Purpose of this Document

This document describes all tools (software, hardware), which are required for servicing of the digitizer.

► Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.1:
1.2	03-2010	• Added "Laser Beam Detection Toolkit" as recommended tool. See section 1.2. • Adapted descriptions of service client menus “Exchanged Components” and “Maintenance Indicator” to changes in software CRE_1607A. See sections 2.2.16 and 2.2.17.

► Referenced Documents

Document	Title
DD+DIS131.09E	CR 30-X Service Bulletin number 28: Laser Beam Detection Toolkit CM+9 5175 2940 0 and FireWire Connector Shield CM+9 5175 1081 0 available
DD+DIS333.09E	CR 30-X Service Bulletin number 32: Software CRE_1607A available
DD+DIS150.06E	CR 30-X Service Documentation Chapter 3.6, Adjustments and Calibrations

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► Manufacturer

Agfa HealthCare N.V.

Publisher

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

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1 Machine specific Tools

The listing of machine specific tools is divided in required tools and recommended tools.

Required tools: They are required for installation, repair or troubleshooting.

Recommended tools: They may facilitate installation, repair or troubleshooting.

1.1 Required Tools

In addition to the conventional service tools which every service engineer has in his toolbox, the following tools are required for service on the digitizer:

Tool	Part Number*	Purpose
Anti-static wrist strap	CM+9 9999 0830 0	To avoid static discharges on electronic components.
CR Screen Cleaner (2 bottles)	10+9 9999 1197 0	To clean the Image Plates.
Lint free cloth	Commercially available	To clean the Image Plates.
Service key	CM+9 0426 6309 0	To override the safety switch.
Vacuum Cleaner	Commercially available or CM+9 9999 0895 0 (Vacuum cleaner 220/240V, 50Hz)	To clean the digitizer during maintenance.
Dirt bags for vacuum cleaner (10 x)	CM+9 9999 0896 0	To clean the digitizer during maintenance. Fits to Vacuum Cleaner CM+9 9999 0895 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

1.2 Recommended Tools

Tool	**Part Number***	**Purpose**
Canned air	Commercially available	To remove dust from modules after disassembling from device.
Laser Beam Detection Toolkit	CM+9 5175 2940 0	To check and adjust the laser beam position at digitizers manufactured between 10/2006 and 09/2009.
Magnifying glass 8x	CM+9 9579 9904 0	To check image quality of films at the lightbox.
Multimeter	Commercially available	• To adjust the cassette edge detection sensor. • For troubleshooting
Service PC	Commercially available	• To copy the digitizer software from PC to CD ROM or USB stick. • To evaluate the infocounter offline.
USB memory stick	Commercially available	To transfer data between the processing station and the service PC.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

✓ NOTE:

As some screws are difficult to access, it is recommended to have a 3 mm hex key with ball-shaped head and a 6 mm magnetic hex key in the tools assortment.

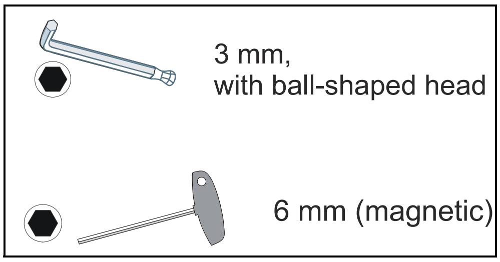


Figure 1

2 Digitizer Service Client

The "Service Client" is the service software for the digitizer.

- It is installed on the processing station in production.
- It also contains the device software (i.e. program files for the different nodes) for the digitizer.
- The up-to-date CR30-X service client is available via MEDNET GSO Library path: Computed Radiography – CR Digitizers – CR30-X
- It is started via menu: All Programs - Agfa CR 30-X - Service Client

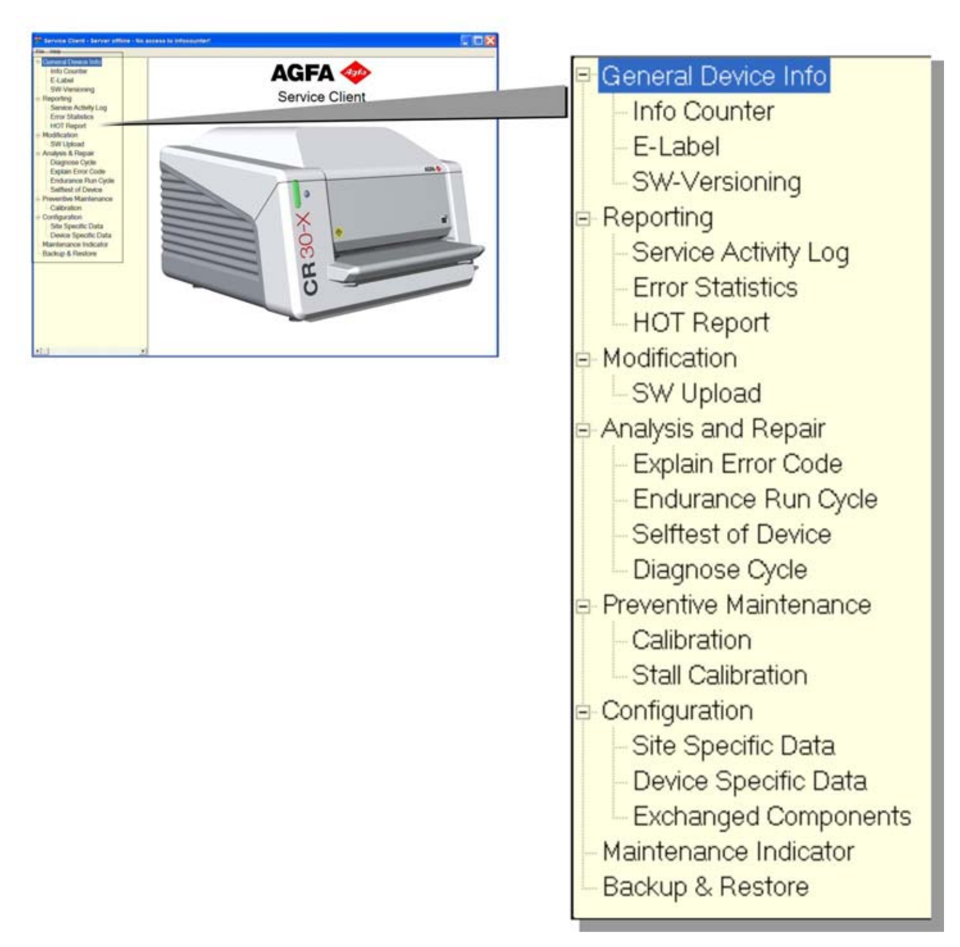

AGFA
Service Client
CR 30-X
General Device Info
Info Counter
E-Label
SW-Versioning
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
SW Upload
Analysis and Repair
Explain Error Code
Endurance Run Cycle
Selftest of Device
Diagnose Cycle
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Site Specific Data
Device Specific Data
Exchanged Components
Maintenance Indicator
Backup & Restore

Figure 2: CR30-X Service Client menus

NOTE:

It is possible to use the CR30-X service client also on the service PC.

Following functions can be accessed:

Directly after installation of the Service Client:

- Function “Explain Error Code”

After Restore of a CR30-X backup file:

- View Infocounter
- View E-Label entries
- View Service Activity Log
- View Error Statistics

Prerequisites for Installation:

- Windows XP (home or professional)
- .Net Visual J# (to be obtained via www.microsoft.com)

2.1 Installing the Service Client on the Control PC

NOTE:

- All steps for software upgrade / update of the digitizer are described in a document which is part of the software on MEDNET GSO Library (readme or enclosure document). Depending on the software version, the procedure might be different to the steps described here.
- The software installation for the digitizer is made in 2 steps:

  Step 1: De-install the previous digitizer software (if applicable) and install the current software (incl. service client = service software) on the control PC. Details see this section.

  Step 2: Upload the software from control PC to the digitizer. Details see section 2.2.7.

IMPORTANT:

Before starting any software de-installation activity at the control PC, **switch off the digitizer**. Otherwise the digitizer driver on the control PC will automatically be de-installed.

(1) Select "START - Log Off <current user>" to log-off the current user.

(2) When the log-in screen appears login as "crservice".

(3) Exit the NX software via "NX Main Menu → Exit NX".

(4) Exit the "Error Viewer".

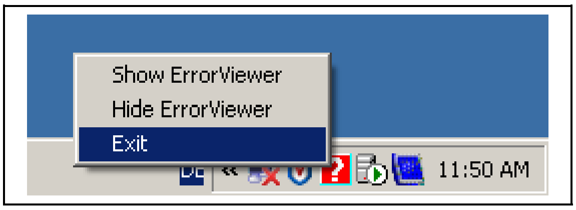


Figure 3

(5) Switch off the digitizer.

(6) Deinstall the digitizer software on the control PC: Select "Start → Settings → Control Panel → Add or Remove Programs → CR 30-X".

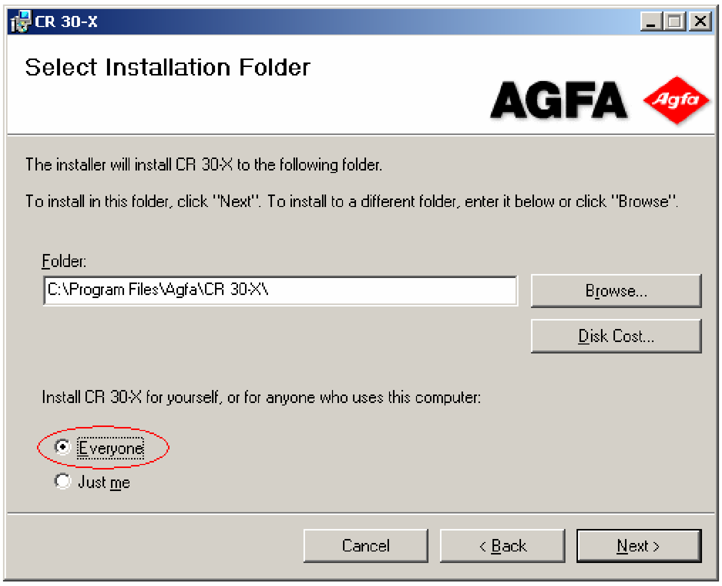
(7) If at the end of the deinstallation process of the old software a window pops up, telling: "You must restart your system ...." continue with section 2.1.1 next page. Otherwise continue with next step.

(8) Copy file "Setup CR 30-X_xxxx.msi" (xxxx = software version) from USB stick or CD ROM to drive D: on the control PC.

(9) In the windows explorer double-click on file Setup CR 30-X_xxxx.msi.

(10) Select <everyone>. See Figure 4.

(11) Click <next> and follow the instructions of the software installer.



Select Installation Folder

The installer will install CR 30-X to the following folder.

To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".

Folder: C:\Program Files\Agfa\CR 30-X\

Install CR 30-X for yourself, or for anyone who uses this computer:

● Everyone
○ Just me

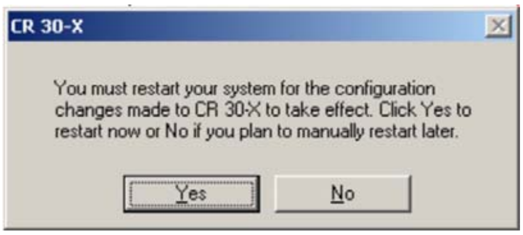
Figure 4

(12) When finished, restart the control PC.

2.1.1 Troubleshooting Software Installation Problems at the Control PC

The following problems may occur during software installation at the control PC:

Symptom 1 After de-installation of the old digitizer software on the control PC following error message pops-up:



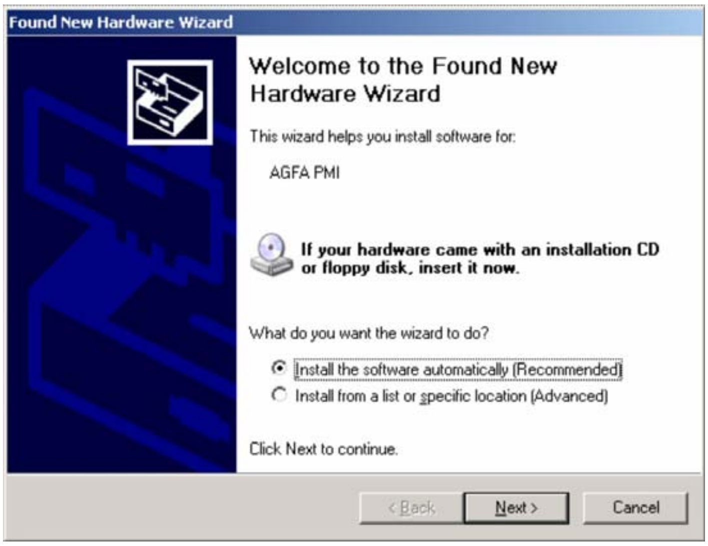
You must restart your system for the configuration changes made to CR 30-X to take effect. Click Yes to restart now or No if you plan to manually restart later.

Figure 5

Cause The NX software or the error viewer have not been closed before software de-installation.

Solution Restart the control PC. Continue with software installation.
See step (9) previous page.

Symptom 2 After reboot of the control PC the screen "Welcome to the Found New Hardware Wizard" appears.



Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

AGFA PMI

If your hardware came with an installation CD or floppy disk, insert it now.

What do you want the wizard to do?

● Install the software automatically (Recommended)
○ Install from a list or specific location (Advanced)

Click Next to continue.

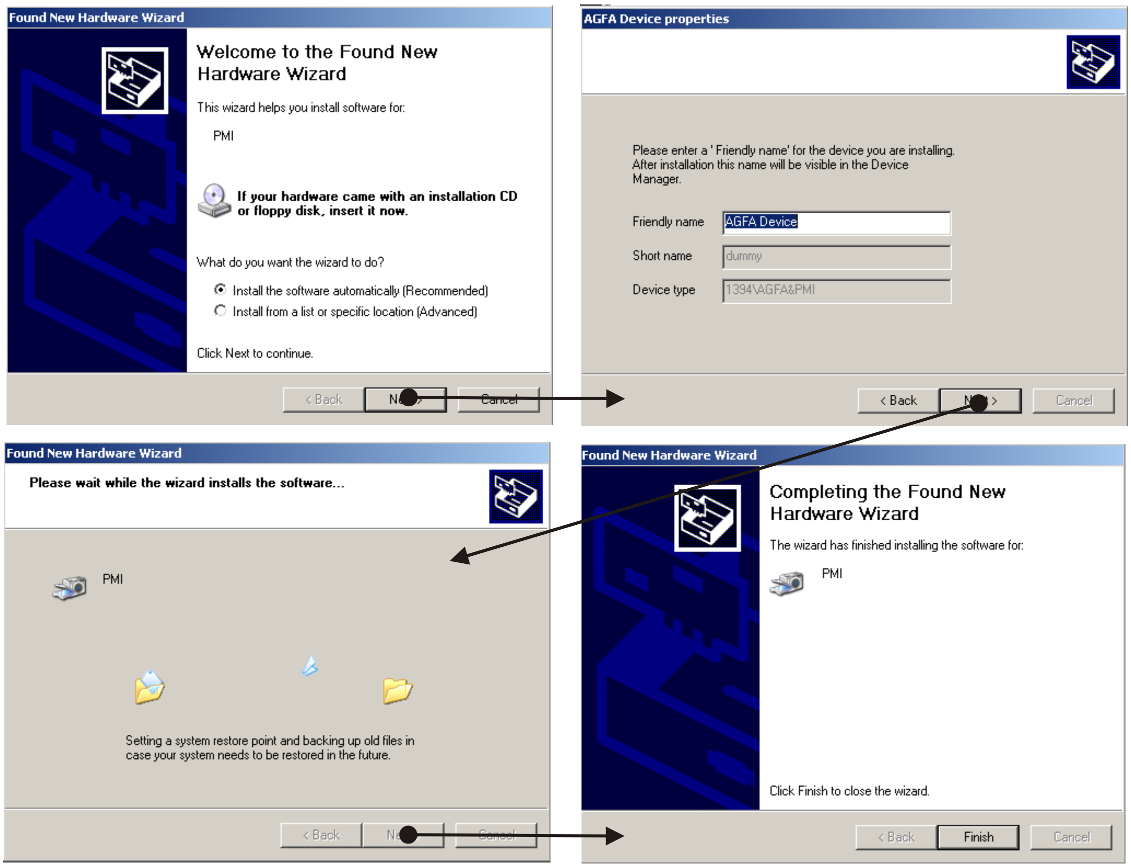
Figure 6

Cause Digitizer was **not** switched off during software de-installation on the control PC. In this case the digitizer driver on the control PC will also be de-installed.

Solution

(1) Cancel the "Found new Hardware Wizard" and continue with software installation.

(2) Install the driver via "found new hardware wizard" which pops up automatically after software upload to the digitizer (and restart of the control PC). See Figure 7.


Found New Hardware Wizard
< Back
Next >
Cancel
AGFA Device properties
< Back
Next >
Cancel
Found New Hardware Wizard
< Back
Next >
Cancel
Found New Hardware Wizard
< Back
Finish
Cancel

Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

PMI

If your hardware came with an installation CD or floppy disk, insert it now.

What do you want the wizard to do?

● Install the software automatically (Recommended)
○ Install from a list or specific location (Advanced)

Click Next to continue.

Please enter a ' Friendly name' for the device you are installing. After installation this name will be visible in the Device Manager.

Friendly name: AGFA Device
Short name: dummy
Device type: 1394\AGFA&PMI

Please wait while the wizard installs the software...

PMI

Setting a system restore point and backing up old files in case your system needs to be restored in the future.

Completing the Found New Hardware Wizard

The wizard has finished installing the software for:

PMI

Click Finish to close the wizard.

Figure 7

2.2 Service Client Menus

Following menus are available in the digitizer service client:

Menu	Section
General Device Info	
Info Counter	2.2.1
E-Label	2.2.2
SW-Versioning	2.2.3
Reporting	
Service Activity Log	2.2.4
Error Statistics	2.2.5
HOT Report	2.2.6
Modification	
SW Upload	2.2.7
Analysis & Repair	
Diagnose Cycle	2.2.8
Explain Error Code	2.2.9
Endurance Run Cycle	2.2.10
Selftest of Device	2.2.11
Preventive Maintenance	
Calibration (Shading Calibration)	2.2.12
Stall Calibration	2.2.13
Configuration	
Site specific data	2.2.14
Device specific data	2.2.15
Exchanged components	2.2.16
Maintenance Indicator	2.2.17
Backup & Restore	2.2.18

2.2.1 Service Client Menu “Info Counter”

Purpose The Info Counter provides device-specific information on following items:

- Hardware components
- Software components
- Modification history (installation, repair, maintenance)
- History of occurred errors, warnings, and retries
- Used image plates and cassettes

It facilitates recognition of failures and allows reducing the repair time in the field or the repair center.

Usage (1) Select "General Device Info - Info Counter".

(2) Select tab “Lists”.

(3) Select a *List Name*, e.g. *Error History with CBF* by clicking once on the desired entry in the left pane.
The entries of the list are displayed on the right pane.

(4) Select a *List Entry Name* by clicking once on the desired entry in the right pane.
The attributes of the selected entry are displayed in the bottom pane.

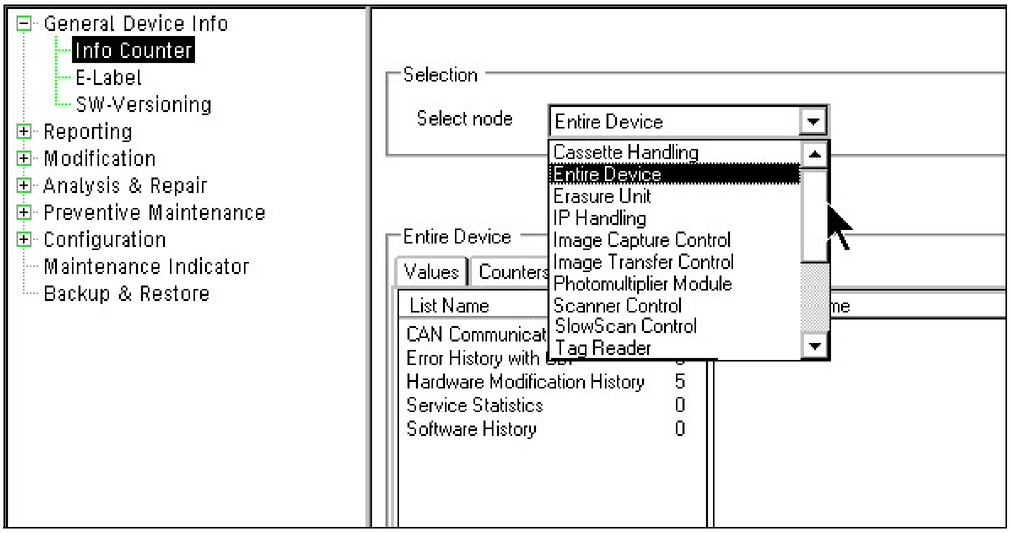

General Device Info
Info Counter
E-Label
SW-Versioning
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Selection
Select node
Entire Device
Cassette Handling
Entire Device
Erasure Unit
IP Handling
Image Capture Control
Image Transfer Control
Photomultiplier Module
Scanner Control
SlowScan Control
Tag Reader
Entire Device
Values
Counters
List Name
CAN Communicat
Error History with
Hardware Modification History 5
Service Statistics 0
Software History 0

Figure 8

2.2.2 Service Client Menu “E-Label”

Purpose

The 'E-labels' (used in 5 different modules, see Figure 9) keep device and module specific data, like module serial number, last error codes or module specific parameters.

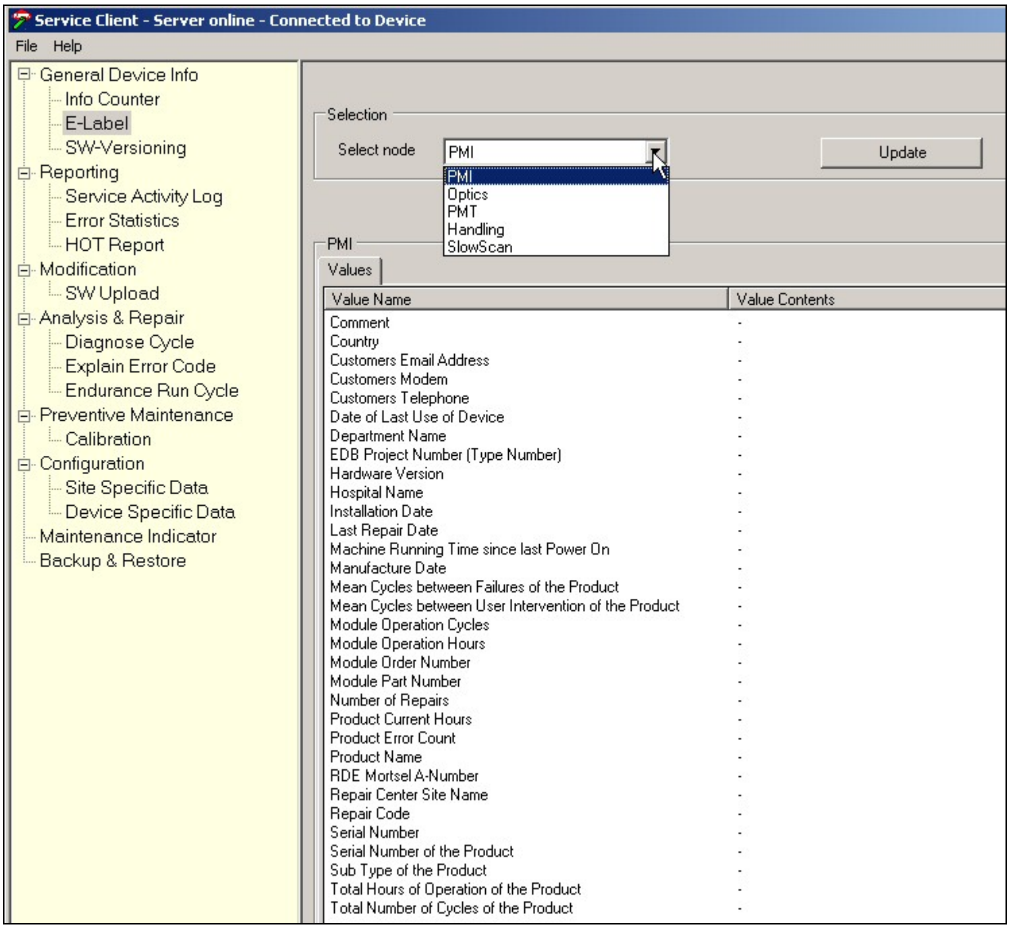
Purpose of the E-Labels:

- Keep module specific data to adjust settings in the digitizer automatically.
- Ensure automatic tracking of module exchange (automatic infocounter entries).
- Allow fault investigations in production, as the returned, defective module has all required data in the E-Label.

Usage

(1) Select "General Device Info - E-Label".

(2) Select the desired E-Label to view the contents.


Service Client - Server online - Connected to Device
File
Help
General Device Info
Info Counter
E-Label
SW-Versioning
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
SW Upload
Analysis & Repair
Diagnose Cycle
Explain Error Code
Endurance Run Cycle
Preventive Maintenance
Calibration
Configuration
Site Specific Data
Device Specific Data
Maintenance Indicator
Backup & Restore
Selection
Update
PMI
Optics
PMT
Handling
SlowScan
PMI
Values

Select node: PMI

Value Name	Value Contents
Comment	-
Country	-
Customers Email Address	-
Customers Modem	-
Customers Telephone	-
Date of Last Use of Device	-
Department Name	-
EDB Project Number (Type Number)	-
Hardware Version	-
Hospital Name	-
Installation Date	-
Last Repair Date	-
Machine Running Time since last Power On	-
Manufacture Date	-
Mean Cycles between Failures of the Product	-
Mean Cycles between User Intervention of the Product	-
Module Operation Cycles	-
Module Operation Hours	-
Module Order Number	-
Module Part Number	-
Number of Repairs	-
Product Current Hours	-
Product Error Count	-
Product Name	-
RDE Mortsel A-Number	-
Repair Center Site Name	-
Repair Code	-
Serial Number	-
Serial Number of the Product	-
Sub Type of the Product	-
Total Hours of Operation of the Product	-
Total Number of Cycles of the Product	-

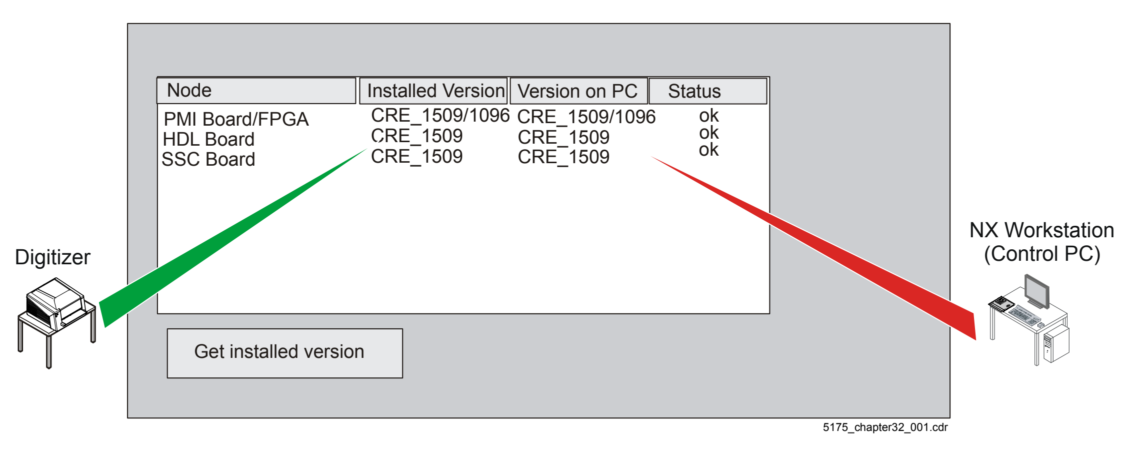
Figure 9

2.2.3 Service Client Menu “SW-Versioning”

Purpose The “software versioning” menu allows checking if the software version currently installed on the control PC corresponds to the version installed on the Digitizer.

Usage (1) Select "General Device Info - SW Versioning".

(2) Select "Get installed version".



Node	Installed Version	Version on PC	Status
PMI Board/FPGA	CRE_1509/1096	CRE_1509/1096	ok
HDL Board	CRE_1509	CRE_1509	ok
SSC Board	CRE_1509	CRE_1509	ok

Digitizer
NX Workstation (Control PC)
Get installed version
5175_chapter32_001.cdr

Figure 10

IMPORTANT:
The installed versions on the PMI board, IP Handling board (HDL Board) and Slow Scan Board (SSC Board) have always to be the same.

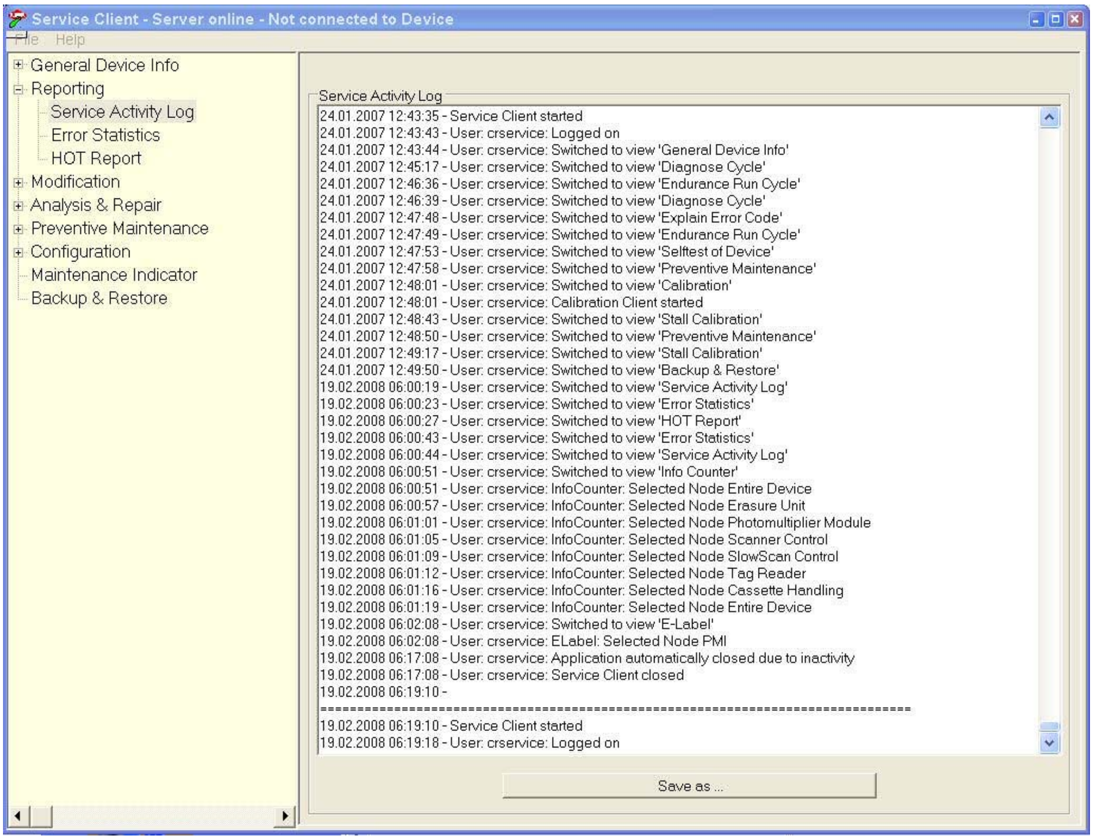
2.2.4 Service Client Menu “Service Activity Log”

Purpose The “service activity log” menu shows a logfile of all actions carried out by the service staff.

The service person name associated with each logfile entry depends on the CR30-X service client login. In the example of Figure 11 the login was “crservice”. Preferably use your name for login.

Usage (1) Select: "Reporting - Service Activity Log"

(2) To save it on the Control PC select "save as".



```
24.01.2007 12:43:35 - Service Client started
24.01.2007 12:43:43 - User: crservice: Logged on
24.01.2007 12:43:44 - User: crservice: Switched to view 'General Device Info'
24.01.2007 12:45:17 - User: crservice: Switched to view 'Diagnose Cycle'
24.01.2007 12:46:36 - User: crservice: Switched to view 'Endurance Run Cycle'
24.01.2007 12:46:39 - User: crservice: Switched to view 'Diagnose Cycle'
24.01.2007 12:47:48 - User: crservice: Switched to view 'Explain Error Code'
24.01.2007 12:47:49 - User: crservice: Switched to view 'Endurance Run Cycle'
24.01.2007 12:47:53 - User: crservice: Switched to view 'Selftest of Device'
24.01.2007 12:47:58 - User: crservice: Switched to view 'Preventive Maintenance'
24.01.2007 12:48:01 - User: crservice: Switched to view 'Calibration'
24.01.2007 12:48:01 - User: crservice: Calibration Client started
24.01.2007 12:48:43 - User: crservice: Switched to view 'Stall Calibration'
24.01.2007 12:48:50 - User: crservice: Switched to view 'Preventive Maintenance'
24.01.2007 12:49:17 - User: crservice: Switched to view 'Stall Calibration'
24.01.2007 12:49:50 - User: crservice: Switched to view 'Backup & Restore'
19.02.2008 06:00:19 - User: crservice: Switched to view 'Service Activity Log'
19.02.2008 06:00:23 - User: crservice: Switched to view 'Error Statistics'
19.02.2008 06:00:27 - User: crservice: Switched to view 'HOT Report'
19.02.2008 06:00:43 - User: crservice: Switched to view 'Error Statistics'
19.02.2008 06:00:44 - User: crservice: Switched to view 'Service Activity Log'
19.02.2008 06:00:51 - User: crservice: Switched to view 'Info Counter'
19.02.2008 06:00:51 - User: crservice: InfoCounter: Selected Node Entire Device
19.02.2008 06:00:57 - User: crservice: InfoCounter: Selected Node Erasure Unit
19.02.2008 06:01:01 - User: crservice: InfoCounter: Selected Node Photomultiplier Module
19.02.2008 06:01:05 - User: crservice: InfoCounter: Selected Node Scanner Control
19.02.2008 06:01:09 - User: crservice: InfoCounter: Selected Node SlowScan Control
19.02.2008 06:01:12 - User: crservice: InfoCounter: Selected Node Tag Reader
19.02.2008 06:01:16 - User: crservice: InfoCounter: Selected Node Cassette Handling
19.02.2008 06:01:19 - User: crservice: InfoCounter: Selected Node Entire Device
19.02.2008 06:02:08 - User: crservice: Switched to view 'E-Label'
19.02.2008 06:02:08 - User: crservice: ELabel: Selected Node PMI
19.02.2008 06:17:08 - User: crservice: Application automatically closed due to inactivity
19.02.2008 06:17:08 - User: crservice: Service Client closed
19.02.2008 06:19:10 -
=================================================================================
19.02.2008 06:19:10 - Service Client started
19.02.2008 06:19:18 - User: crservice: Logged on
```

Figure 11

NOTE:

When the logfile exceeds 1 MB, a new and empty “ServiceActivity.log” file is created.

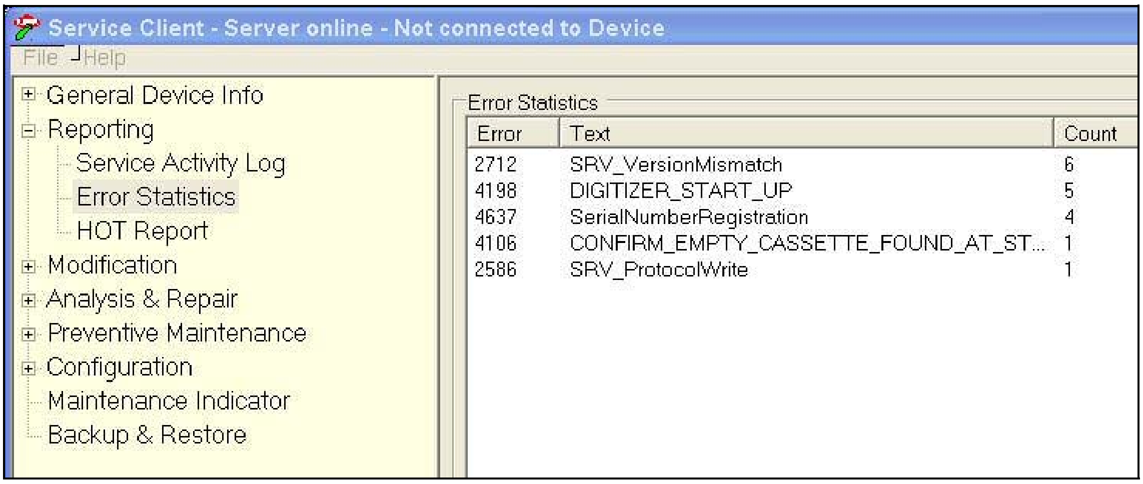
The previous one is automatically renamed to ServiceActivity1.log, which is stored in directory C:\Documents and Settings\All Users\Application Data\Agfa\CR 30-X\Log on the control PC.

All “ServiceActivity.log” files are part of a backup.

2.2.5 Service Client Menu “Error Statistics”

Purpose The “error statistics” menu shows the frequency for all occurred errors. It is used for troubleshooting.

Usage (1) Select "Reporting - Error Statistics".


Service Client - Server online - Not connected to Device
File
Help
General Device Info
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Error Statistics

Error	Text	Count
2712	SRV_VersionMismatch	6
4198	DIGITIZER_START_UP	5
4637	SerialNumberRegistration	4
4106	CONFIRM_EMPTY_CASSETTE_FOUND_AT_ST...	1
2586	SRV_ProtocolWrite	1

Figure 12

2.2.6 Service Client Menu “HOT Report” (Hand-over Test Report)

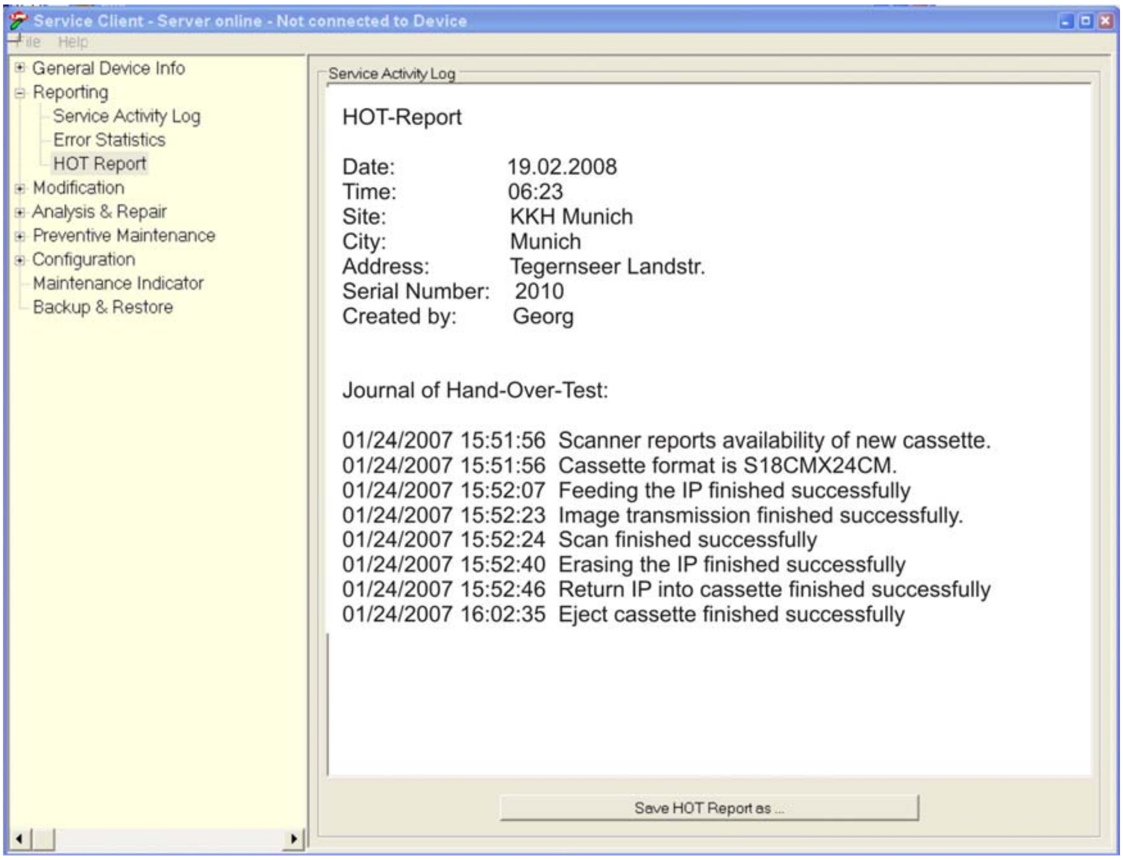
Purpose The menu “Hot Report” gives a summary of the last scan cycle. The main steps of this cassette and IP cycle are listed.

It can be used to check e.g. during installation, if the performed scan cycle was successfully.

The HOT report is overwritten with each new scan cycle.

Usage (1) Select "Reporting - HOT Report".

(2) Select “Save as” to save it on a backup medium (e.g. hard disk or USB stick).


Service Client - Server online - Not connected to Device
File
Help
General Device Info
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Service Activity Log
Save HOT Report as ...

HOT-Report

Date: 19.02.2008
Time: 06:23
Site: KKH Munich
City: Munich
Address: Tegernseer Landstr.
Serial Number: 2010
Created by: Georg

Journal of Hand-Over-Test:

```
01/24/2007 15:51:56  Scanner reports availability of new cassette.
01/24/2007 15:51:56  Cassette format is S18CMX24CM.
01/24/2007 15:52:07  Feeding the IP finished successfully
01/24/2007 15:52:23  Image transmission finished successfully.
01/24/2007 15:52:24  Scan finished successfully
01/24/2007 15:52:40  Erasing the IP finished successfully
01/24/2007 15:52:46  Return IP into cassette finished successfully
01/24/2007 16:02:35  Eject cassette finished successfully
```

Figure 13: Example for a HOT report

2.2.7 Service Client Menu “SW Upload”

Purpose The “SW Upload” menu allows:

- To check if the software version currently installed on the control PC matches with this installed on the digitizer.
- To upload the digitizer software to a specific single, two or all 3 PCB’s (nodes) in the digitizer.

To upload the software from the control PC to the digitizer may be required in the following cases:

- After replacement of the PMI board, slow scan board or IP handling board
- To perform a software update (bug-fixing) or SW upgrade (new functionality)

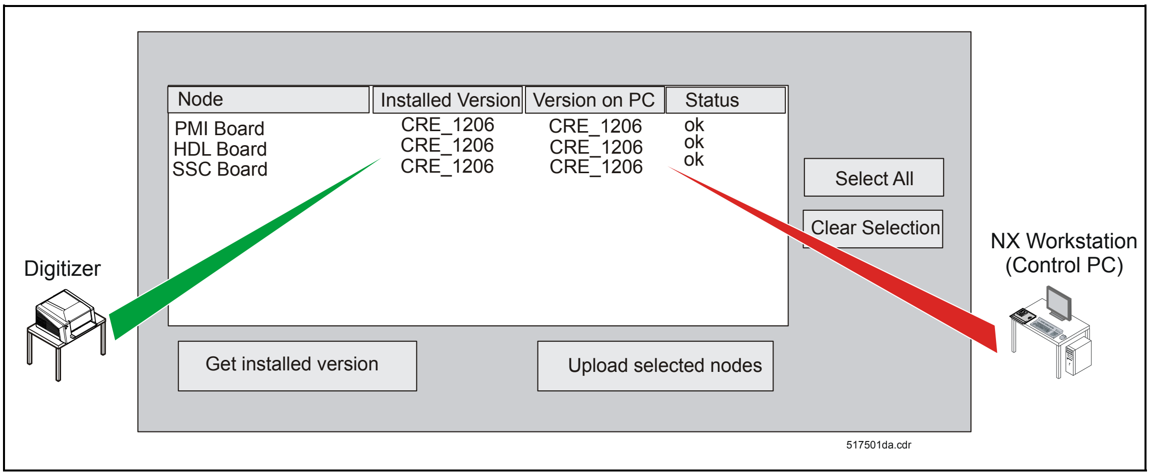
NOTE:

All steps for software upgrade / update of the digitizer are described in a document which is part of the software on MedNet GSO Library (readme or enclosure document). Depending on the software version, the procedure might be different to the steps described here.

Usage

(1) Select "General Device Info - SW Versioning".

(2) Select "Get installed version". See Figure 14.



Node	Installed Version	Version on PC	Status
PMI Board	CRE_1206	CRE_1206	ok
HDL Board	CRE_1206	CRE_1206	ok
SSC Board	CRE_1206	CRE_1206	ok

Figure 14

(3) If the version on the control PC is higher*, select the respective PCB(s) (node(s)) in the Digitizer to update.

*If versions on control PC and digitizer are identical, no software upload is required.
The situation “software on digitizer is higher than on control PC” may only happen during installation due to logistical reasons. In this case it is mandatory to install the latest digitizer service client on the control PC. Refer to section 2.1.

(4) Select "Upload selected nodes".

(5) Wait for approximately 7 minutes till message "versions are current" appears in the message box.

(6) Close the CR 30-X service client.

(7) Answer the dialogue popping up “did you perform any repair or maintenance activities” with "Yes".

(8) Switch off the digitizer.

(9) Restart the control PC.

(10) Switch on the digitizer.

(11) Wait till the digitizer is booted-up, i.e. till the status indicator is green.

(12) Perform a backup and store it on a safe place (not on the control PC!).

IMPORTANT:
The installed versions on the PMI board, IP Handling board (HDL Board) and Slow Scan Board (SSC Board) have always to be the same.

2.2.8 Service Client Menu “Diagnose Cycle”

Purpose Menu “Diagnose Cycle” allows to perform a complete scan cycle manually step by step e.g. for troubleshooting purpose.

Usage **A) Diagnose Cycle of the complete device:**

(1) Select "Analysis & Repair - Diagnose Cycle".

(2) Put a cassette into the digitizer.

(3) Activate one of the grey displayed actions.

B) Diagnose Cycle of the Cassette Unit only:

(1) Open the cassette unit.

(2) Insert a service key in the safety switch.

(3) Select "Analysis & Repair - Diagnose Cycle".

(4) Put a cassette into the digitizer.

(5) Activate one of the grey displayed actions.

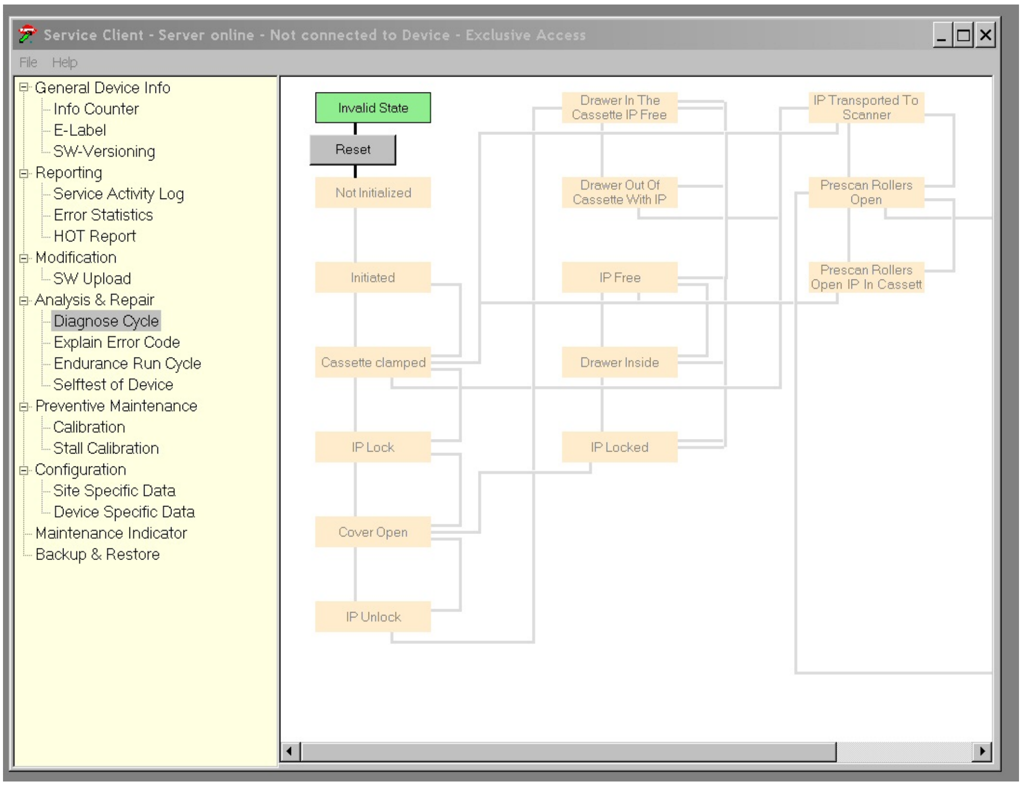

Service Client - Server online - Not connected to Device - Exclusive Access
File
Help
General Device Info
Info Counter
E-Label
SW-Versioning
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
SW Upload
Analysis & Repair
Diagnose Cycle
Explain Error Code
Endurance Run Cycle
Selftest of Device
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Site Specific Data
Device Specific Data
Maintenance Indicator
Backup & Restore
Invalid State
Reset
Not Initialized
Initiated
Cassette clamped
IP Lock
Cover Open
IP Unlock
Drawer In The Cassette IP Free
Drawer Out Of Cassette With IP
IP Free
Drawer Inside
IP Locked
IP Transported To Scanner
Prescan Rollers Open
Prescan Rollers Open IP In Cassett

Figure 15

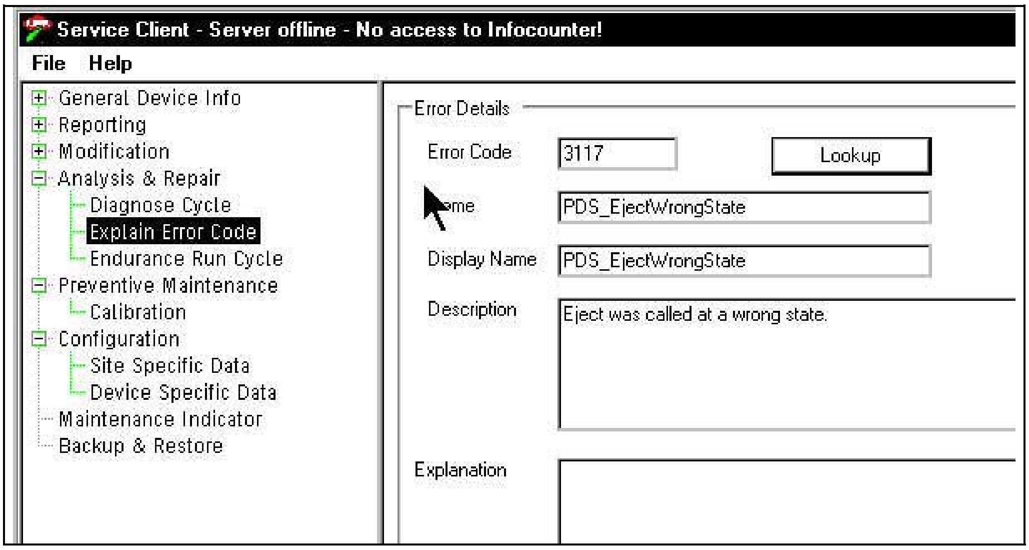
2.2.9 Service Client Menu “Explain Error Code”

Purpose Menu “explain error code” list descriptions for the digitizer error codes.

Usage (1) Select "Analysis & Repair - Explain error code".

(2) Enter the error code.

(3) Select "Look-up".



Service Client - Server offline - No access to Infocounter!

Error Code: 3117

Name: PDS_EjectWrongState

Display Name: PDS_EjectWrongState

Description: Eject was called at a wrong state.

Explanation:

File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Diagnose Cycle
Explain Error Code
Endurance Run Cycle
Preventive Maintenance
Calibration
Configuration
Site Specific Data
Device Specific Data
Maintenance Indicator
Backup & Restore
Error Details
Lookup

Figure 16

2.2.10 Service Client Menu “Endurance Run Cycle”

Purpose The “Endurance Run Cycle” allows to run any amount of cycles with/ without scanning and/ or erasure. This can be helpful when troubleshooting sporadic image plate handling failures.

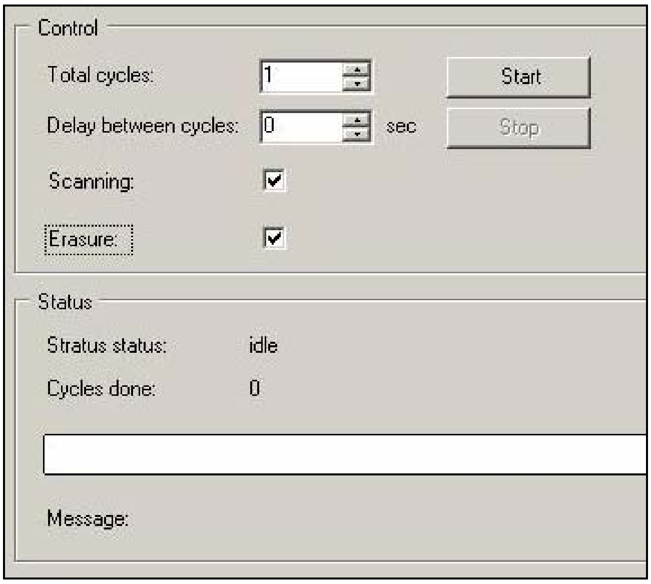
Usage

(1) Select “Analysis & Repair - Endurance run Cycle”.

(2) Put a cassette into the digitizer.

(3) Select the number of cycles and delay between cycles (if required).

(4) Select “Scanning” and/or “Erasure” if required.



Control

Total cycles: 1

Delay between cycles: 0 sec

Scanning: ☑

Erasure: ☑

Status

Stratus status: idle

Cycles done: 0

Message:

Figure 17

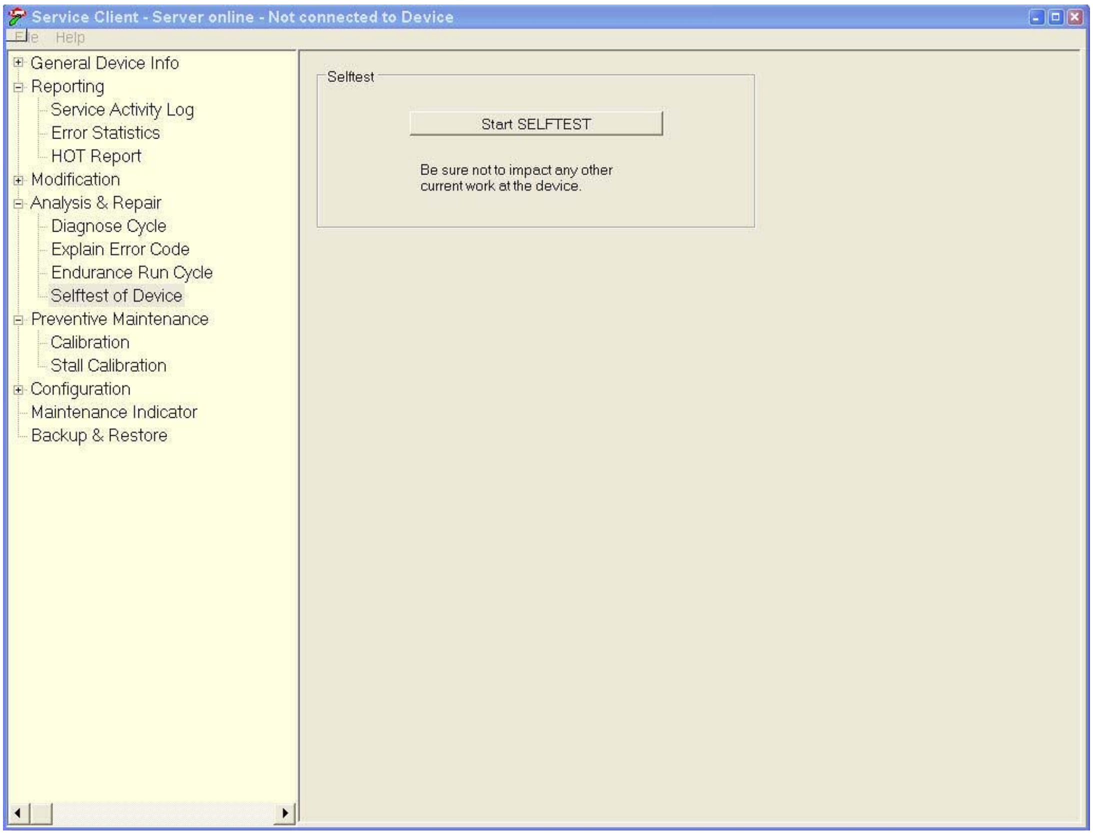
2.2.11 Service Client Menu “Selftest of Device”

Purpose The ‘Selftest of Device” menu allows a reboot with selftest of the digitizer via CR30-X service client. The functional sequence of the selftest is identical to the selftest during switch-on.
Refer to chapter 2, Functional Description.

Usage

(1) Select "Analysis & Repair - Selftest of device".

(2) Wait till the digitizer has rebooted. This takes approximately 1 minute.


Service Client - Server online - Not connected to Device
File Help
General Device Info
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
Analysis & Repair
Diagnose Cycle
Explain Error Code
Endurance Run Cycle
Selftest of Device
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Maintenance Indicator
Backup & Restore
Selftest
Start SELFTEST

Be sure not to impact any other current work at the device.

Figure 18

2.2.12 Service Client Menu “Calibration”

Purpose The “calibration” menu allows performing a shading calibration.

Usage

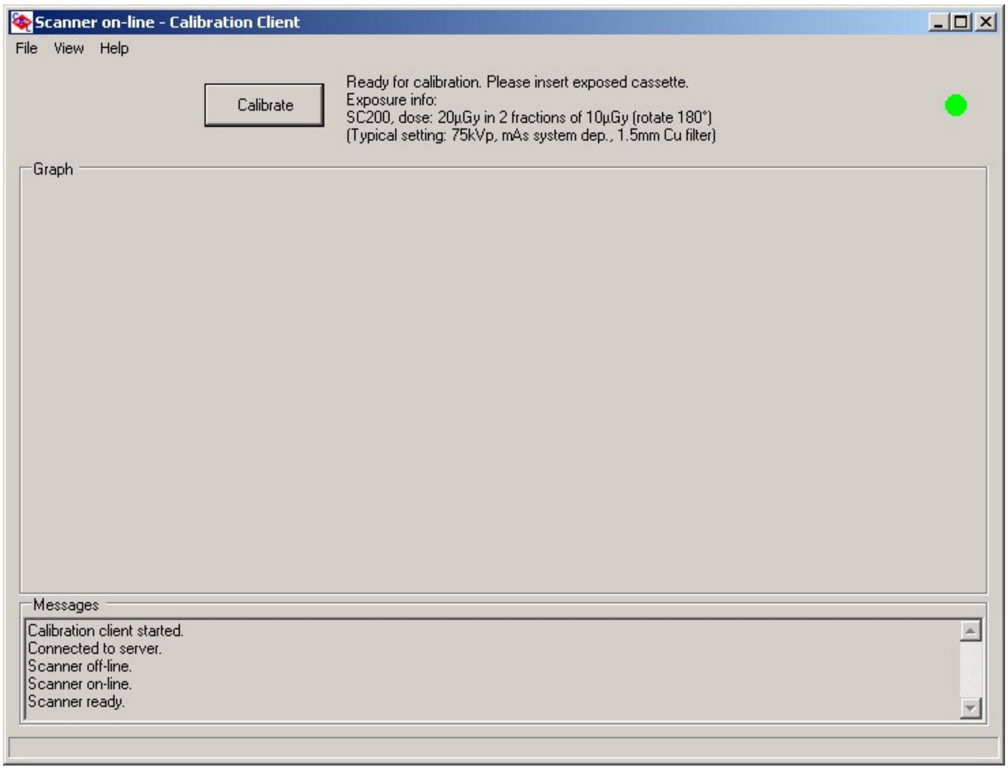
(1) Select "Preventive Maintenance - Calibration".

(2) Expose a cassette as indicated.

(3) Enter the cassette.

(4) Select "Calibrate".

For details see chapter 3.6, Adjustments and Calibrations.



Ready for calibration. Please insert exposed cassette.
Exposure info:
SC200, dose: 20µGy in 2 fractions of 10µGy (rotate 180°)
(Typical setting: 75kVp, mAs system dep., 1.5mm Cu filter)

Calibration client started.
Connected to server.
Scanner off-line.
Scanner on-line.
Scanner ready.

Figure 19

2.2.13 Service Client Menu “Stall Calibration”

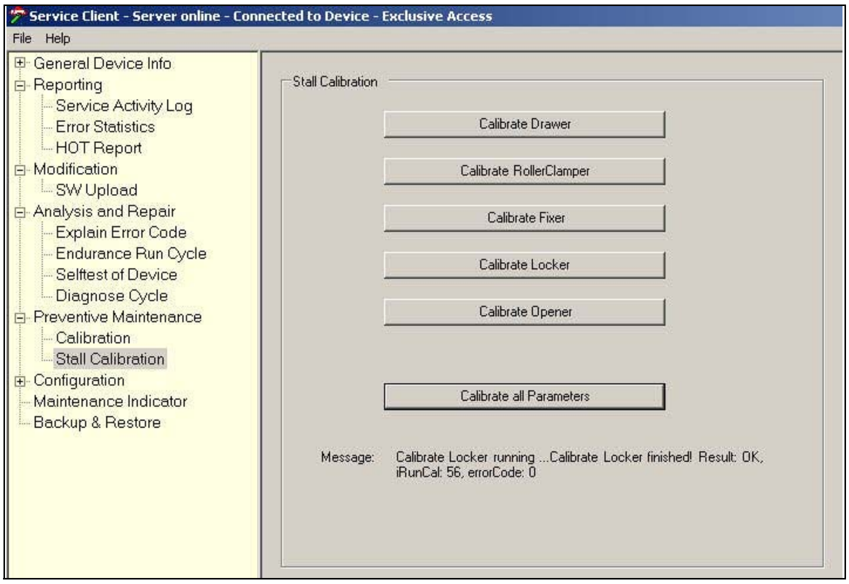
Purpose The “Stall Calibration” menu allows performing a stall calibration for a specific motor or for all motors.

Usage (1) Select "Preventive Maintenance – Stall Calibration".

(2) Select the required motor or all motors.

(3) Wait till the stall calibration is finished: Takes approximately 1 minute per motor.

For details see also chapter 3.6, Adjustments and Calibrations.


Service Client - Server online - Connected to Device - Exclusive Access
File
Help
General Device Info
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
SW Upload
Analysis and Repair
Explain Error Code
Endurance Run Cycle
Selftest of Device
Diagnose Cycle
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Maintenance Indicator
Backup & Restore
Stall Calibration
Calibrate Drawer
Calibrate RollerClamper
Calibrate Fixer
Calibrate Locker
Calibrate Opener
Calibrate all Parameters

Message: Calibrate Locker running ...Calibrate Locker finished! Result: OK, iRunCal: 56, errorCode: 0

Figure 20

NOTE:

For troubleshooting of a module the final message parameter “iRunCal” can be used (see Figure 20):

If executed three consecutive times, the displayed “iRunCal” value may vary ± 2 digits only (e.g. iRunCal values 56, 58, 60). Larger deviations show mechanical problems in the mechanics of the respective drive.

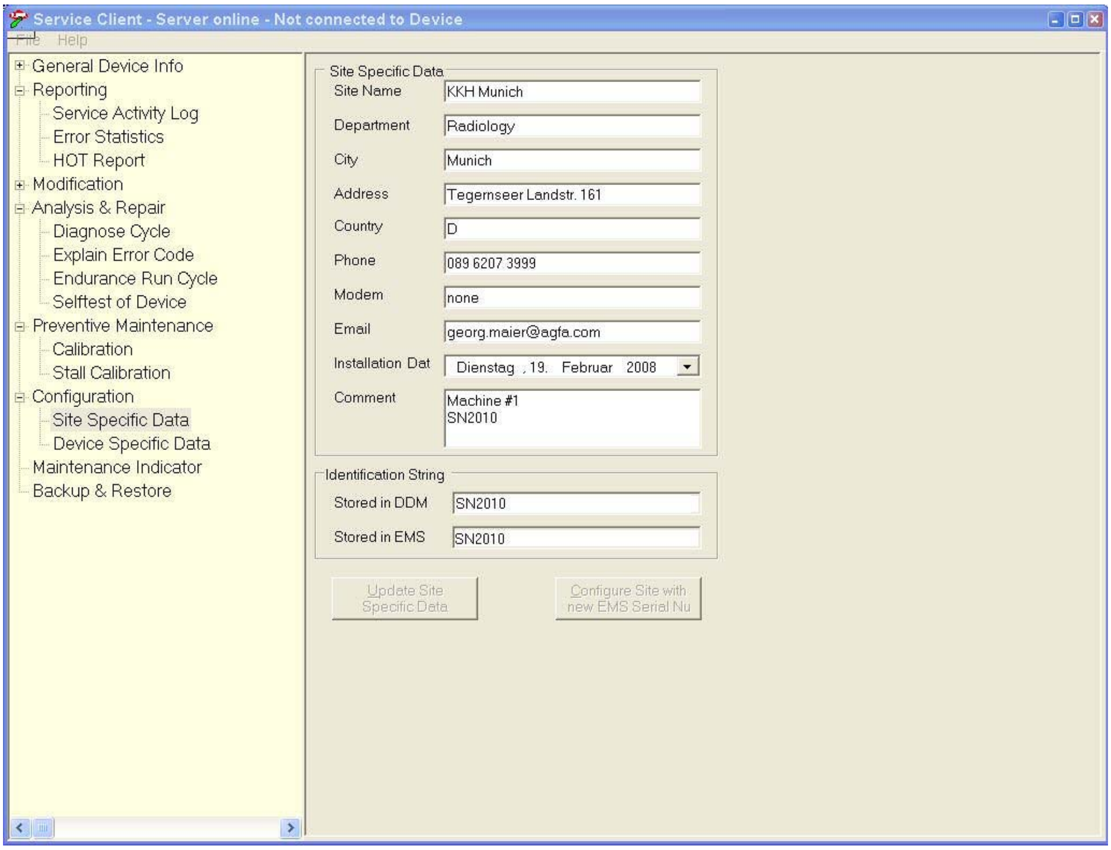
2.2.14 Service Client Menu “Site specific Data”

Purpose Menu “site specific data” allows entering the site specific data for exact identification of the digitizer. The data are part of the infocounter and the E-labels.

Usage (1) Select "Configuration - Site specific data".

(2) Enter the required data.

(3) Select "Update Site Specific Data".


Service Client - Server online - Not connected to Device
File
Help
General Device Info
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
Analysis & Repair
Diagnose Cycle
Explain Error Code
Endurance Run Cycle
Selftest of Device
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Site Specific Data
Device Specific Data
Maintenance Indicator
Backup & Restore
Update Site Specific Data
Configure Site with new EMS Serial Nu

Site Specific Data
Site Name: KKH Munich
Department: Radiology
City: Munich
Address: Tegernseer Landstr. 161
Country: D
Phone: 089 6207 3999
Modem: none
Email: georg.maier@agfa.com
Installation Dat: Dienstag , 19. Februar 2008
Comment: Machine #1
SN2010

Identification String
Stored in DDM: SN2010
Stored in EMS: SN2010

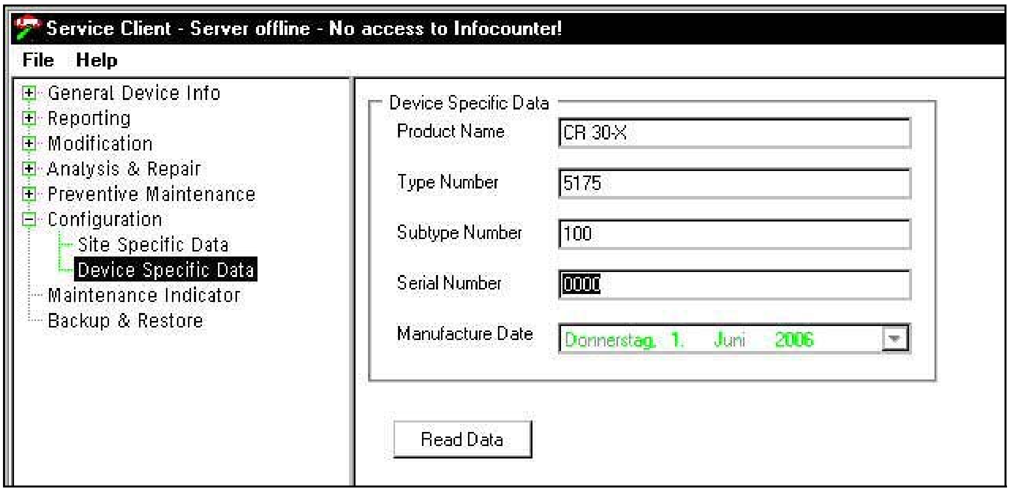
Figure 21

2.2.15 Service Client Menu “Device specific Data”

Purpose Menu “Device specific data” allows to read-out the device specific data which were configured in production.

Usage (1) Select "Configuration - Device specific data".

(2) Select "Read Data".



Service Client - Server offline - No access to Infocounter!

Device Specific Data
Product Name: CR 30-X
Type Number: 5175
Subtype Number: 100
Serial Number: 0000
Manufacture Date: Donnerstag, 1. Juni 2006

File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Site Specific Data
Device Specific Data
Maintenance Indicator
Backup & Restore
Read Data

Figure 22

✓ NOTE:

The device specific data are “read-only”.

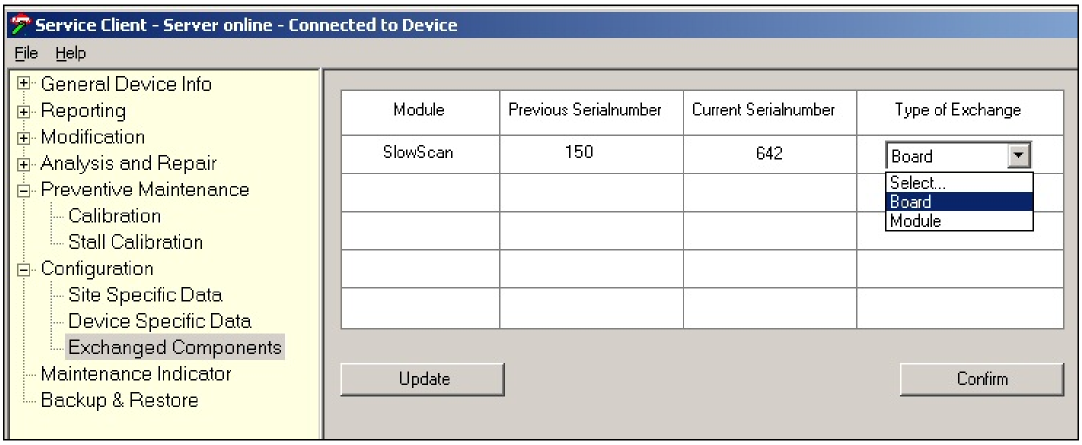
2.2.16 Service Client Menu “Exchanged Components”

Purpose Menu “Exchanged components” allows to define whether the exchanged component is a module (e.g. slow scan unit) or part of a module (e.g. slow scan board).
Only available as of software CRE_1509.

Usage (1) Select "Configuration – Exchanged Components".

(2) Select "Board" or “Module” according to following table:

Exchanged component	Type of Exchange
Slow scan unit	Module
Slow scan board	Board
PMT with light collector	Module
IP handling board	Board
Cassette fixation unit	Module
Optic module	Module
PMI2 / PMI 3 board	Board


Service Client - Server online - Connected to Device
File
Help
General Device Info
Reporting
Modification
Analysis and Repair
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Site Specific Data
Device Specific Data
Exchanged Components
Maintenance Indicator
Backup & Restore
Select...
Board
Module
Update
Confirm

Module	Previous Serialnumber	Current Serialnumber	Type of Exchange
SlowScan	150	642	Board

Figure 23: Example: Selecting Board as "Type of Exchange"

NOTE:

This menu is required, as for some replacements it is not known for the digitizer, whether the exchanged component is a module (e.g. slow scan unit) or part of a module (e.g. slow scan board). For more details refer to sections 2.2.16.1, Replacement Scenarios and 2.2.16.2, Handling of Replacements in different Software Versions

2.2.16.1 Replacement Scenarios

For exchange of spare parts with E-Labels* two scenarios can be distinguished:

*E-Labels contain spare part specific data, entered in production. Following boards have E-Labels included: PMT module, Printed circuit board in Optic Module, IP handling board, Slow scan board, PMI / PMI2 / PMI 3 board.

Item	Scenario 1	Scenario 2
Type of spare part with E-Label	Spare part is a sub-module of a larger (adjusted) module and thus not adjusted in production: • Slow scan board • IP handling board • PMI / PMI2 / PMI 3 Board	Spare part is an adjusted module: • Optic Module • Slow scan unit (incl. Slow scan board) • PMT with light collector • Cassette Fixation Unit (incl. IP handling board)
Serial number of spare part written to E-label	9999*	Spare part specific SN, e.g. 2345
Required E-label read/ write direction after part replacement	Module specific data have to be written from control PC to the board.	Module specific data have to be read and copied from new board to control PC.
Required selection in menu “Configuration – Exchanged Components”	Board	Module

* If a board was used in a digitizer for test purposes and has been put back in the supply chain it will have a serial number different from 9999.

2.2.16.2 Handling of Replacements in different Software Versions

The following table explains how the different software versions handle the replacement scenarios described in section 2.2.16.1.

<table>
<tr><th>Digitizer Software Version</th><th>Serial Number of new spare part = 9999</th><th>Serial Number of new spare part < 9999</th></tr>
<tr><td>≤ CRE_1405</td><td>Module specific data are automatically written from Control PC to the board after first switch on.</td><td>Module specific data are automatically written from the board to Control PC after first switch on.</td></tr>
<tr><td>CRE_1509 / 1511</td><td colspan="2">Step 1: After exchange and switch on the digitizer detects a new module with E-Label and issues error 4642.
Step 2: The service engineer enters in the service client, whether the exchanged part is a submodule of a larger module (see scenario 1 page) or an own, adjusted module (see scenario 2 page).</td></tr>
<tr><td>≥ CRE_1607</td><td>Module specific data are automatically written from Control PC to the board after first switch on.</td><td>Step 1: After exchange and switch on the digitizer detects a new module with E-Label and issues error 4642.
Step 2: The service engineer enters in the service client, whether the exchanged part is a submodule of a larger module (see scenario 1 page) or an own, adjusted module (see scenario 2 page).</td></tr>
</table>

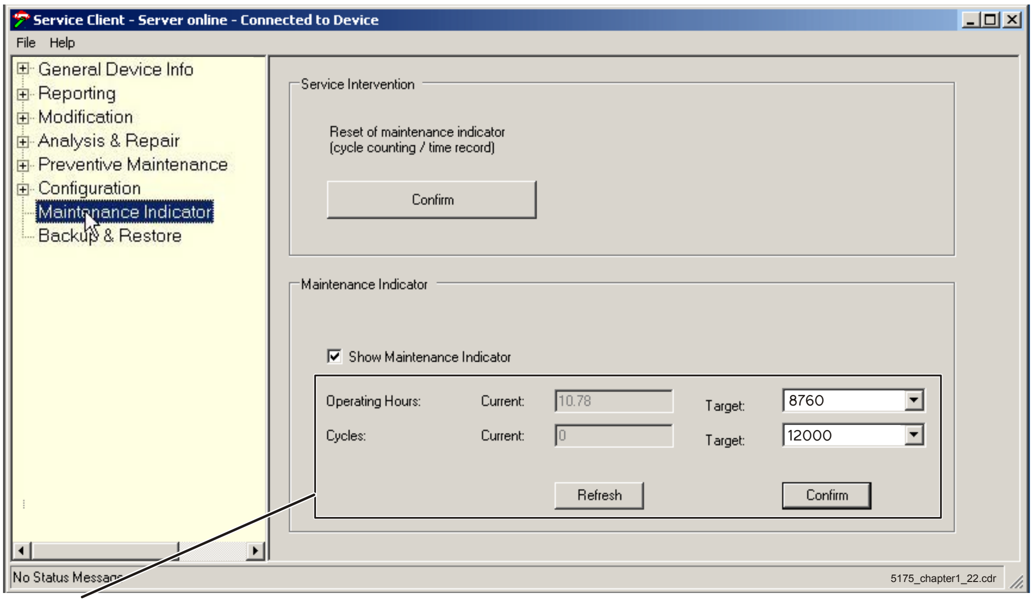
2.2.17 Service Client Menu “Maintenance Indicator”

Purpose The menu “Maintenance Indicator” allows:

- To configure whether following messages shall pop-up at the processing station if the maintenance indication target value ais reached:
    - o "Maintenance interval will expire within a short time. Please contact service." This message appears approximately 6 weeks before the defined maintenance due date or due cycles (Default: 1 year / 12.000 cycles) are reached.
    - o "Maintenance interval expired. Please contact service." appears, when the maintenance due date or due cycles are expired is counter is reached.
- To reset the maintenance indicator counter.
- To change the target values for operating hours and cycles.

Usage

(1) Select "Maintenance Indicator".
(2) Select "confirm" to reset the time/cycle counter.
(3) Switch off/on (default = on) the maintenance indicator.



Service Client - Server online - Connected to Device
File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Service Intervention
Confirm
Maintenance Indicator
Refresh
Confirm
No Status Message
5175_chapter1_22.cdr

Reset of maintenance indicator
(cycle counting / time record)

☑ Show Maintenance Indicator

Operating Hours: Current: 10.78 Target: 8760
Cycles: Current: 0 Target: 12000

Operating Hours and Cycles are only displayed if “Show Maintenance Indicator” is activated.

Figure 24

NOTE:

Changing the target values for operating hours and cycles is not available for software version below CRE_1607.

2.2.18 Service Client Menu “Backup & Restore”

Purpose

The menu “Backup & Restore” allows:

- To store device specific settings and other relevant data[1] (e.g. infocounter, logfiles etc.) in a backup Zip file (=Backup).
- To restore device specific settings and information when required (=Restore).

Perform always a backup in the following cases:

- At preventive maintenance
- After replacements of parts
- After software update or upgrade

A Restore is required in following cases:

- After replacement of the processing station
- After replacement of the hard disk on the processing station
- After a “clean install procedure” on the processing station

---

[1] A backup ZIP file contains following data: Device specific data (e.g. Serial Number, Module specific data, calibration lines), Logfiles, Infocounter, Service Activity Logfile

IMPORTANT:

The backup of the digitizer data (=device specific settings and other relevant data) are stored in a database in a directory on the control PC.

If the backup on the Control PC is lost (e.g. after exchange of the Control PC, Clean Install Procedure etc.) the proper function of the digitizer is not guaranteed. An error message like 4637 may pop-up which indicates that the serial number of the digitizer is not known.

To have **all** data as up-to-date as possible after exchange of the Control PC or Clean Install Procedure follow the basic rules:

- Always make a backup after each service intervention unless only data have been retrieved (e.g. viewing infocounter).
- After replacement of the control PC or hard disk of the control PC proceed as follows:
  Step 1: Switch off digitizer.
  Step 2: Restore the latest backup.
  Step 3: Re-boot control PC.
  Step 4: Switch on digitizer.

Backup:

(1) Select "Backup & Restore".

(2) Select "Backup selected files" to perform a backup.

Restore:

(1) Select "Backup & Restore".

(2) Select "Restore selected files" to perform a restore.

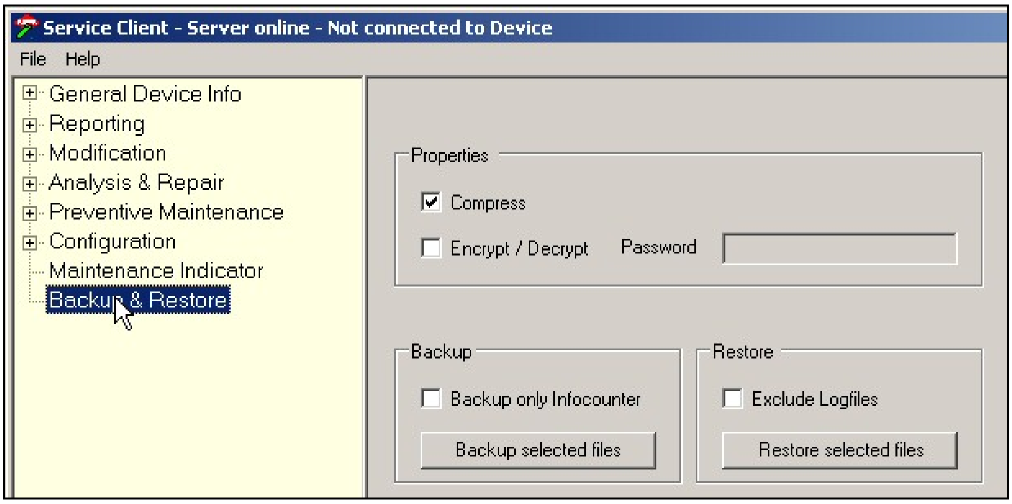

Service Client - Server online - Not connected to Device
File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Properties
☑ Compress
☐ Encrypt / Decrypt
Password
Backup
☐ Backup only Infocounter
Backup selected files
Restore
☐ Exclude Logfiles
Restore selected files

Figure 25

3 Remote Desktop

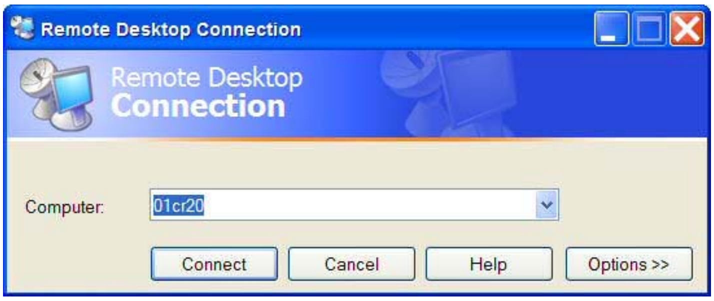
Purpose Remote connection via the control PC to the digitizer.

Usage

(1) Connect the service PC to the network where the control PC with digitizer is located (e.g. via Agfa SRSS).

(2) On the local PC select ‘Start – Programs – Accessories – Communications – Remote Desktop’.

(3) Enter the hostname or IP address of the processing station.



Computer: 01cr20

Figure 26: Example "Remote Desktop Connection" screen

(4) Select “Connect”.

(5) On the processing station start the CR30-X service client.

NOTE:

- The processing station is by default **enabled** for ‘remote desktop’. Enabling for remote desktop is done via function ‘START – Control Panel – System – Remote”.

- If the CR30-X service client is started in a remote session, following functions are not accessible, as they require presence of a service engineer at the digitizer:
  - Diagnose Cycle
  - Endurance run cycle
  - Calibration (= Shading Calibration)

HEALTHCARE
Imaging Services

Chapter 3.3

Repair and Service

Troubleshooting

Document No: DD+DIS150.06E

CR 30-X

Type 5175 / 100/110

► Please note

The Chapter ‘Troubleshooting’, Edition 1, Revision 0, has been replaced by the separately available Troubleshooting Guide, DD+DIS151.08E.

Please download the Troubleshooting Guide from the GSO Library:

MEDNET GSO → Computed Radiography → CR Digitizers →
CR 30-X → Trouble shooting guide

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Document No: DD+DIS150.06E

CR 30-X

Type 5175 / 100/110

► Purpose of this Document

This document describes the meaning of the LEDs and switches on the different printed circuit boards and lists the fuses.

► Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.0:
1.1	04-2008	• Added information about PMI2 Board LEDs. See section 1. • Added location of fuses. See Figure 1, Figure 2, Figure 3, Figure 4.

► Referenced Documents

Document	Title
DD+DIS063.08E	Service Bulletin No. 23, Software CRE_1509 released to support new PMI2 Boards

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► Manufacturer

Agfa HealthCare N.V.

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

LIST OF CONTENTS

1 LEDS AND SWITCHES ON THE PMI / PMI2 BOARD....................4
2 LEDS, FUSES AND SWITCHES ON THE SCAN CONTROL BOARD....................7
3 LEDS, FUSES AND SWITCHES ON THE IP HANDLING BOARD....................8
4 FUSES ON THE PMI POWER DISTRIBUTION BOARD....................9
5 LEDS ON THE USER INTERFACE BOARD....................10

1 LEDS and Switches on the PMI / PMI2 Board

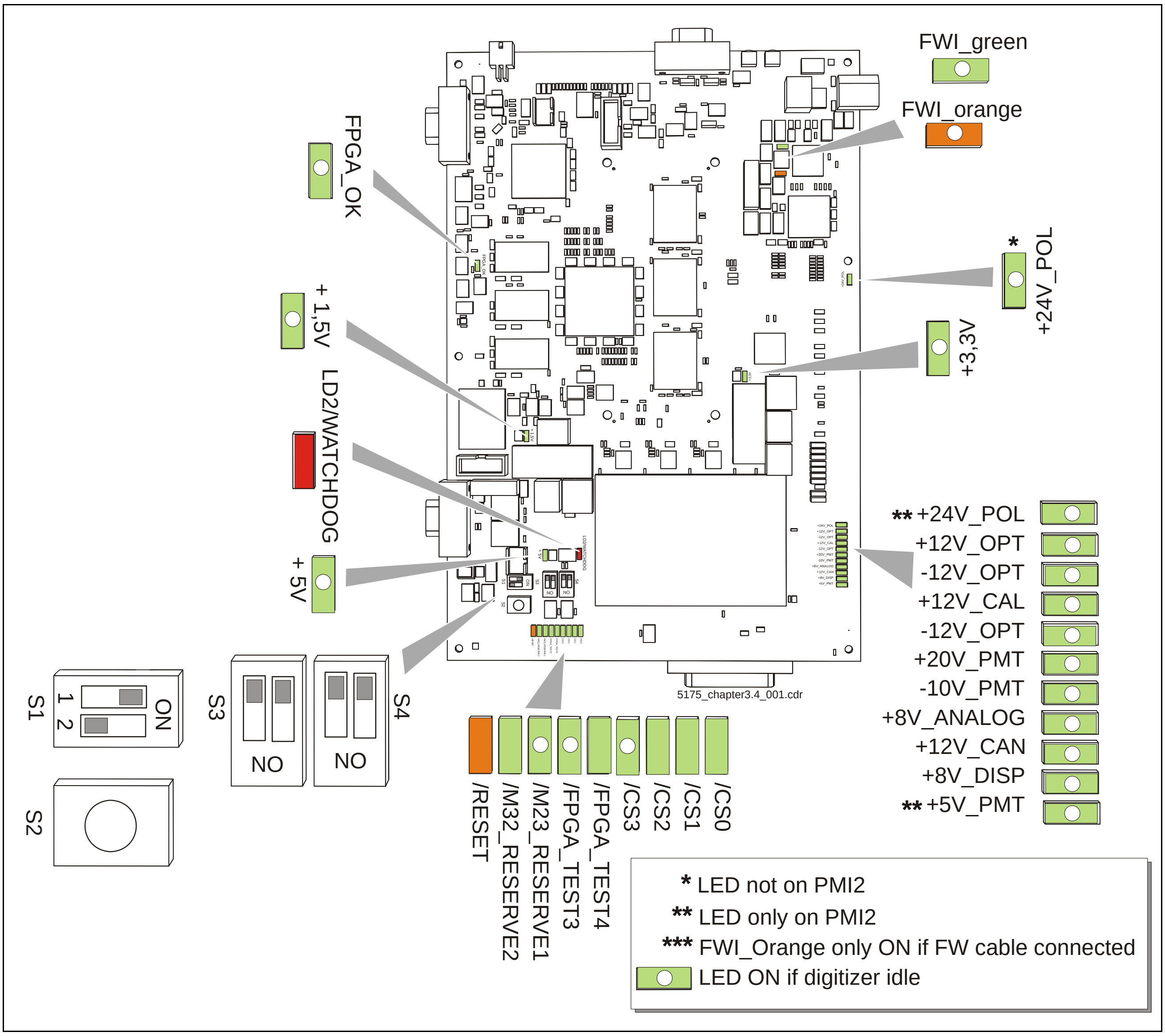
FWI_green
FWI_orange
FPGA_OK
+ 1,5V
LD2/WATCHDOG
+ 5V
* +24V_POL
+3,3V
** +24V_POL
+12V_OPT
-12V_OPT
+12V_CAL
-12V_OPT
+20V_PMT
-10V_PMT
+8V_ANALOG
+12V_CAN
+8V_DISP
** +5V_PMT
S1
ON
1 2
S2
S3
NO
S4
NO
/RESET
/M32_RESERVE2
/M23_RESERVE1
/FPGA_TEST3
/FPGA_TEST4
/CS3
/CS2
/CS1
/CS0
5175_chapter3.4_001.cdr
* LED not on PMI2
** LED only on PMI2
*** FWI_Orange only ON if FW cable connected
LED ON if digitizer idle

Figure 1

LED	Meaning
FPGA_OK	Green LED, default ON. Program properly loaded.
+1,5 V	Green LED, default ON. Voltage +1,5 V okay.
LD2 Watchdog	Red LED, default OFF. ON during reboot only (approx. 30 sec.) or if board operating system hangs
+ 5 V	Green LED, default ON. Voltage +5 V okay.

LED	Meaning
/Reset	Orange LED, default OFF. ON during board reset.
/M32_Reserve2	Green LED, default OFF. For R&D purpose only.*
/M32_Reserve1	Green LED, default ON. For R&D purpose only.*
/FPGA_Test3	Green LED, default ON. For R&D purpose only.*
/FPGA_Test4	Green LED, default OFF. For R&D purpose only.*
/CS3	Green LED, default ON. For R&D purpose only.*
/CS2	Green LED, default OFF. For R&D purpose only.*
/CS1	Green LED, default OFF. For R&D purpose only.*
/CS0	Green LED, default OFF. For R&D purpose only.*
+5 V PMT	Green LED, default ON. Voltage +5 V okay. Only available on PMI2 board.
+8 V DISP	Green LED, default ON. Voltage +8 V for display okay.
+12 V CAN	Green LED, default ON. Voltage +12 V for CAN bus okay.
+8 V Analog	Green LED, default ON. Voltage +8 V for analog circuit okay.
-10 V PMT	Green LED, default ON. Voltage -10 V for PMT okay.
+20 V PMT	Green LED, default ON. Voltage +20 V for PMT okay.
-12 V CAL	Green LED, default ON. Voltage - 12 V for calibration board okay.
+12 V CAL	Green LED, default ON. Voltage +12 V for calibration board okay.
-12 V OPT	Green LED, default ON. Voltage -12 V for optic module okay.
+12 V OPT	Green LED, default ON. Voltage +12 V for optic module okay.
+24 V POL	Green LED, default ON. Voltage +24 V for polygon okay.
+3,3 V	Green LED, default ON. Voltage +3,3 V okay.
FWI_Orange	Orange LED, default ON. FWI cable connected between digitizer and processing station.
FWI_Green	Green LED, default ON. Voltage for FireWire Interface okay.

*If these LEDs are off, this does not necessarily mean malfunction of the board. May depend on SW version, how LED is programmed.

Switch	Meaning
S1 / 1	ON = normal operation (= default) OFF = debug position. Only for R&D purpose.
S1 / 2	OFF. Only for R&D purpose.
S2 / 1	OFF. Only for R&D purpose.
S2 / 2	OFF. Only for R&D purpose.
S3 / 1	OFF. Only for R&D purpose.
S3 / 2	OFF. Only for R&D purpose.

2 LEDS, Fuses and Switches on the Scan Control Board

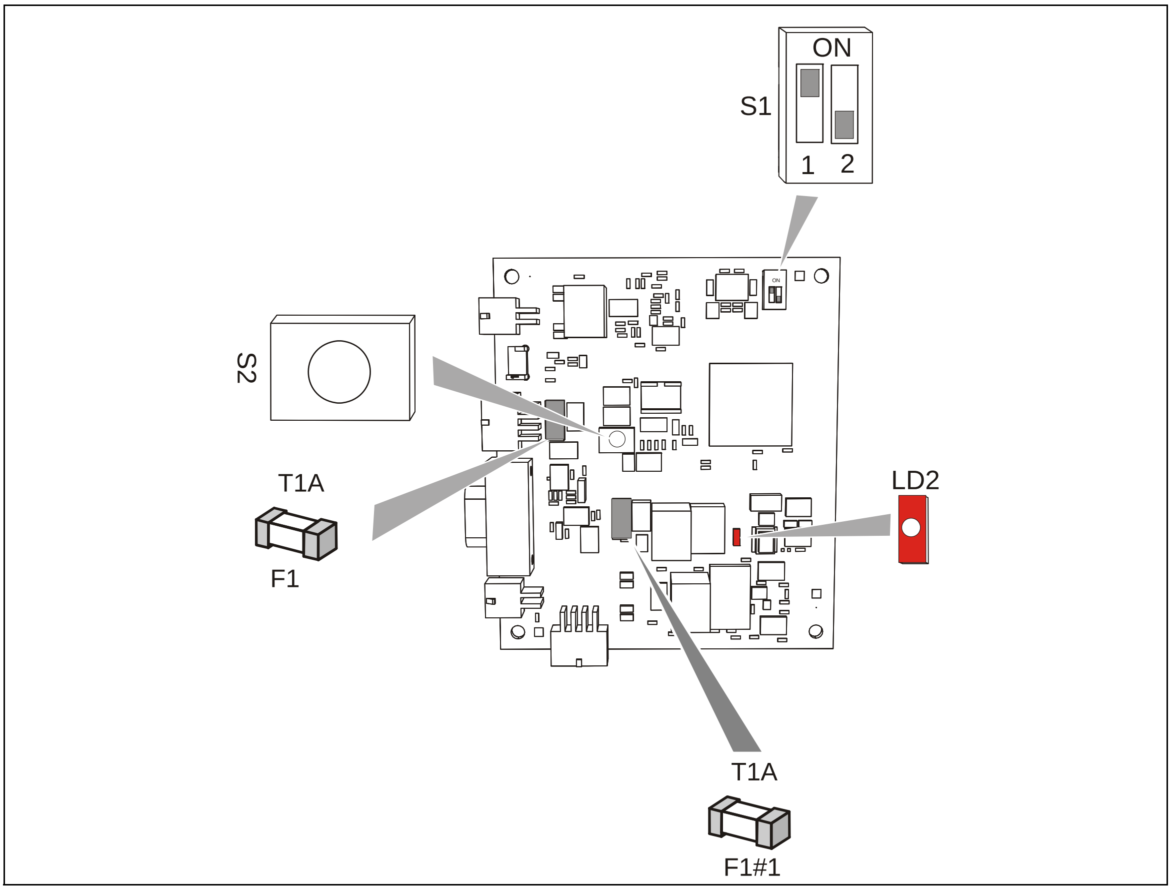

Figure 2

LED	Meaning
Red LD2	ON if power for the board available.

Switch	Meaning
S1 / 1	ON = normal operation (= default) OFF = debug position. Only for R&D purpose.
S1 / 2	Not used.
S2	Board reset. Only for R&D purpose.

IMPORTANT:

Fuses are displayed only to check fuses in case of a suspected defective fuse.

Always replace the board if a fuse is defective.

3 LEDS, Fuses and Switches on the IP Handling Board

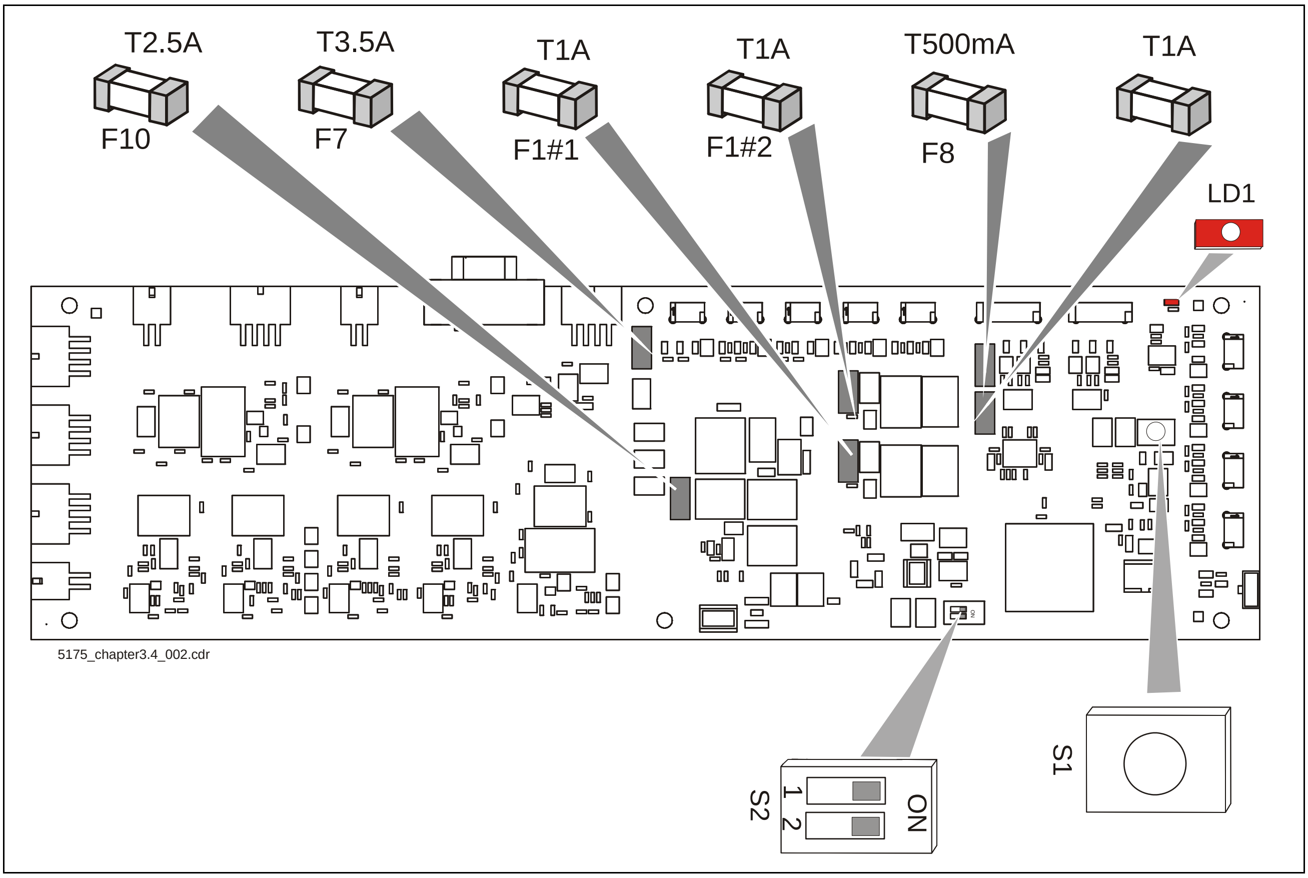
T2.5A
F10
T3.5A
F7
T1A
F1#1
T1A
F1#2
T500mA
F8
T1A
LD1
5175_chapter3.4_002.cdr
S1
S2
1
2
ON

Figure 3

LED	Meaning
Red LD1	ON if power for the board available.

Switch	Meaning
S1	Board reset. Only for R&D purpose.
S2 / 1	ON = normal operation (= default) OFF = debug position. Only for R&D purpose.
S2 / 2	Not used.

IMPORTANT:

Fuses are displayed only to check fuses in case of a suspected defective fuse.

Always replace the board if a fuse is defective.

4 Fuses on the PMI Power Distribution Board

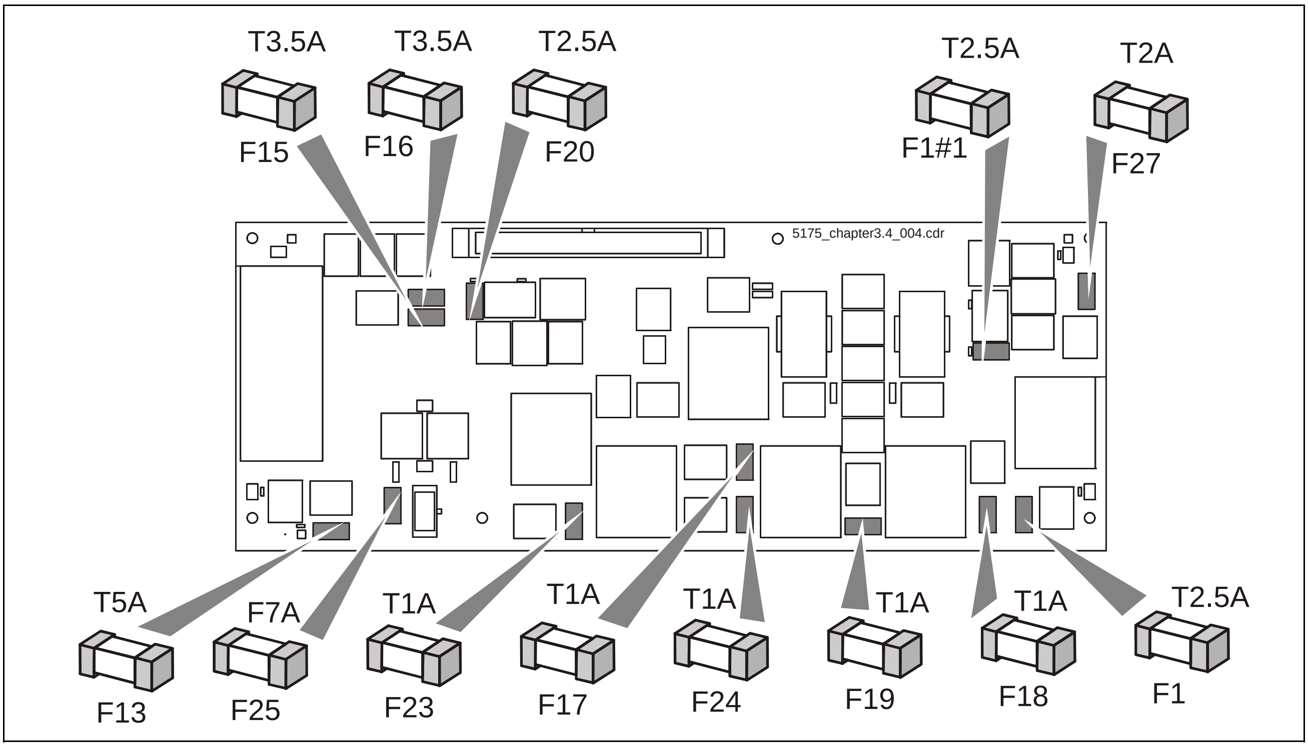
T3.5A
T3.5A
T2.5A
T2.5A
T2A
F15
F16
F20
F1#1
F27
5175_chapter3.4_004.cdr
T5A
F7A
T1A
T1A
T1A
T1A
T1A
T2.5A
F13
F25
F23
F17
F24
F19
F18
F1

Figure 4

IMPORTANT:

Fuses are displayed only to check fuses in case of a suspected defective fuse.

Always replace the board if a fuse is defective.

5 LEDs on the User Interface Board

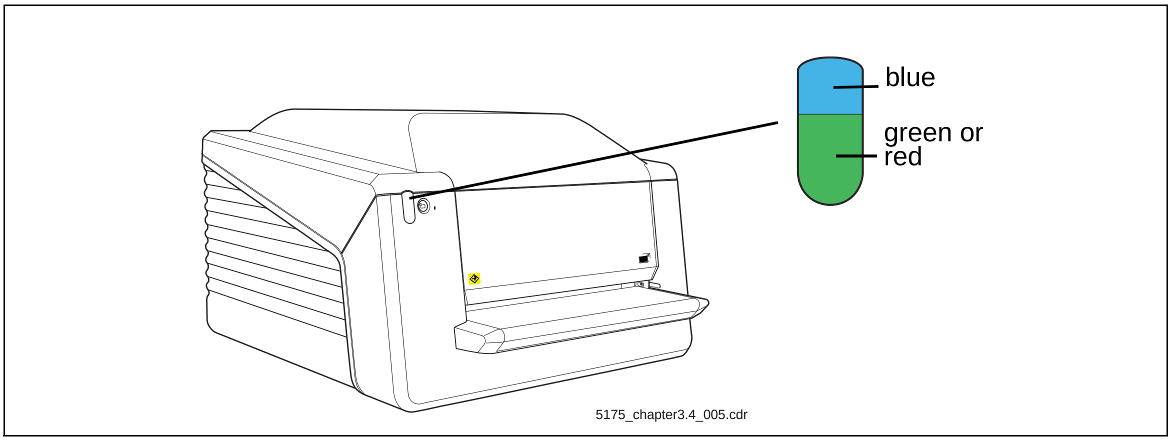

Figure 5

LED	Meaning
Blue	ON if erasure cycle active
Green	ON if … • Ready / Stand-by • Cassette is ready for removal
Green flashing	ON during scan cycle active
Red	ON in case of Service Mode (Connection via service client active)
Red flashing	ON during …. • Boot-up • No connection to processing station • Error

HEALTHCARE
Imaging Services

Chapter 3.5

Repair and Service

Replacements / Repair Procedures

Document No: DD+DIS150.06E

CR 30-X

Type 5175 / 100/110

► Purpose of this Document

This document describes the replacements of parts incl. verification method. Where applicable references are made to chapter 3.6, adjustments.

► Document History

Edition. Revision	**Release Date**	**Changes compared to previous Version 1.1**
1.2	03-2009	Removed following replacement instructions and made available as an enclosure to the spare part: o Replacing the Cassette Fixation Steel Band. See section 2.3. o Replacing the Drawer Unit. See section 2.8. • Added reference to enclosure for: o Replacing the Side Plate Transport Unit (left Hand Side). See section 2.12. o Replacing the Drawer Motor (M4). See section 2.15. • Added instructions for following new spare parts: o Replacing the Fixer Stepper Motor (M1). See section 2.16. o Replacing the Opener Stepper Motor (M3). See section 2.17. o Replacing the Roller Stepper Motor (M5). See section 2.18. o Replacing the Roller Clamping Stepper Motor (M6). See section 2.19.

► Referenced Documents

Document	**Title**
DD+DIS150.06E	Chapter 3.6: Adjustments and Calibrations

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Manufacturer

Agfa HealthCare N.V.

Publisher

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D - 81539 München
Germany

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

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1 Replacing the Covers

1.1 Replacing the Front Cover

REQUIRED SPARE PART*:
Type 5175/100: CM+9 5175 1630 2
Type 5175/110: CM+9 5175 1650 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

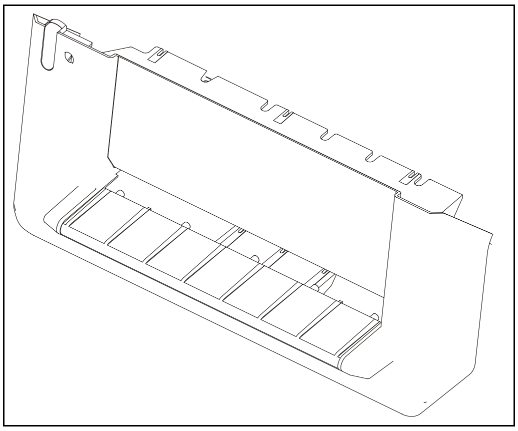
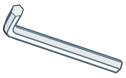


Figure 1

REQUIRED TOOLS:



3 mm

REQUIRED TIME:
10 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

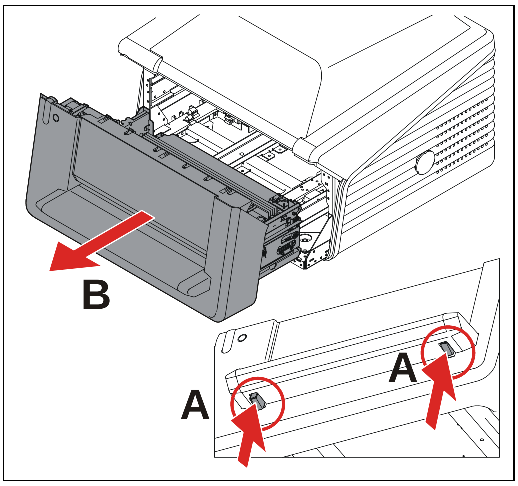


Figure 2

DOCUMENT CONTROL NOTE:
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(5) Remove 3 upper screws.

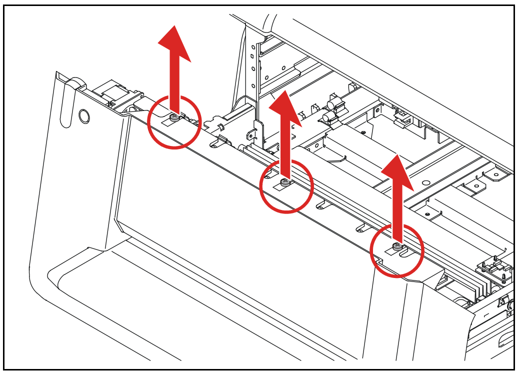


Figure 3

(6) Open 3 lower screws at front cover a few turns.

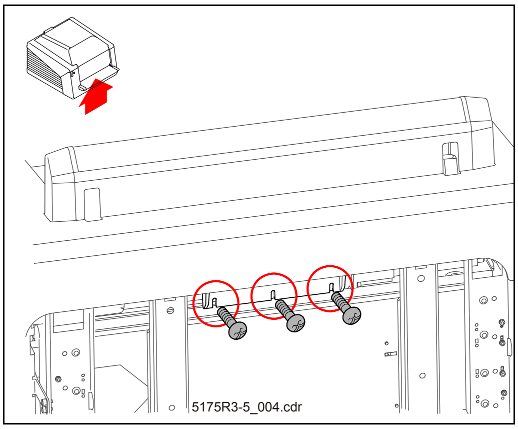


Figure 4

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 5.

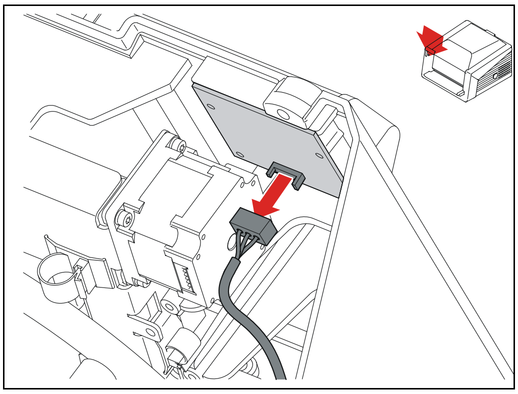


Figure 5

(9) Disconnect ground cable at left hand side.

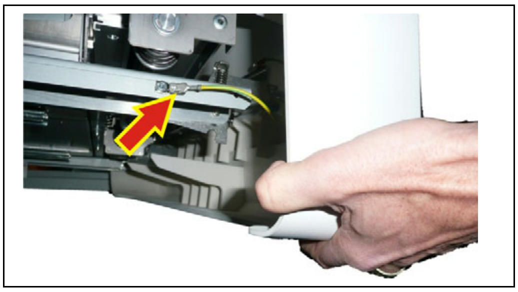


Figure 6

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

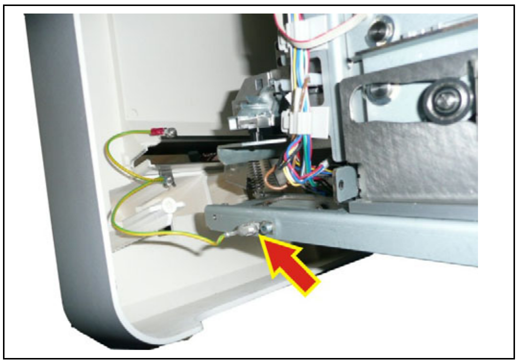


Figure 7

ASSEMBLY:

(1) Mount in reverse order.

Verification: (1) Switch on the digitizer.

(2) Wait till the green light at the user interface lights up (takes approx. 1,5 min.).

Result: The front cover is replaced.

1.2 Replacing the Left Cover

REQUIRED SPARE PART*:
CM+9 5175 1503 1

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

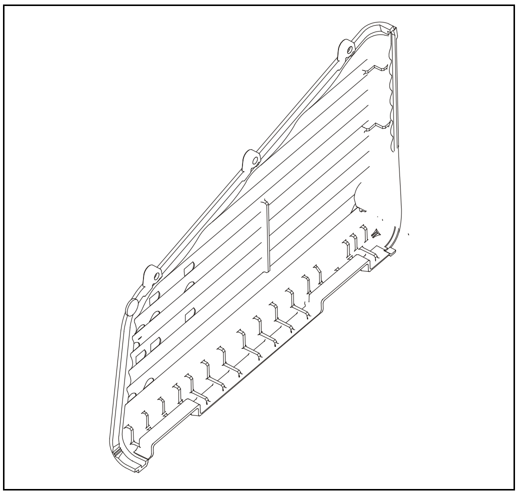
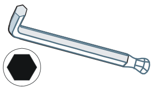


Figure 8

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
10 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

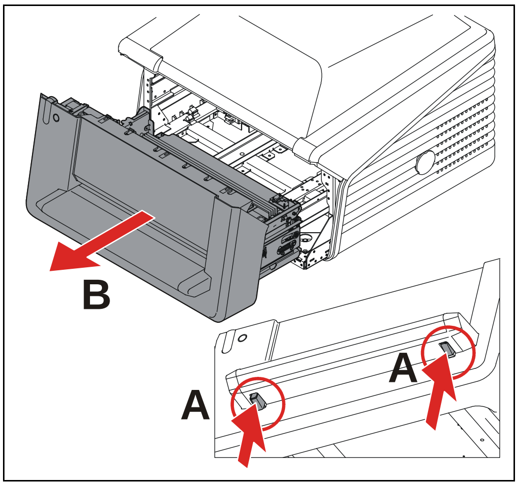


Figure 9

(3) Remove 3 screws of the top cover.

(4) Remove top cover.

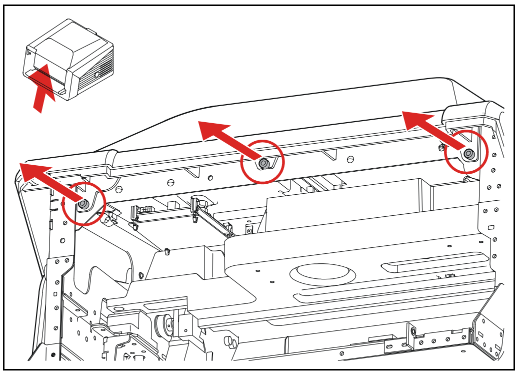


Figure 10

(5) Remove 3 screws of the left cover.

(6) Remove left cover.

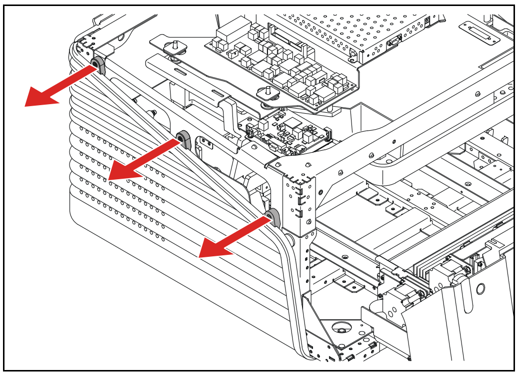


Figure 11

ASSEMBLY:

(1) Mount in reverse order.

Verification: (1) Switch on the digitizer

(2) Wait till the green light at the user interface lights up (takes approx. 1,5 min.).

Result: The left cover is replaced.

1.3 Replacing the right cover

REQUIRED SPARE PART*:
CM+9 5175 1504 1

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

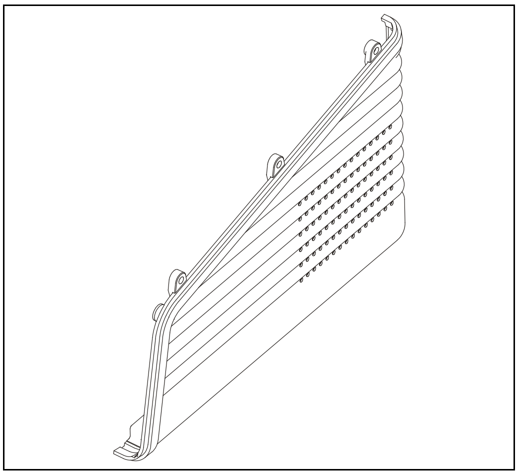
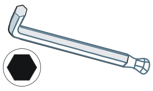


Figure 12

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
10 min.

DOCUMENT CONTROL NOTE:
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DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

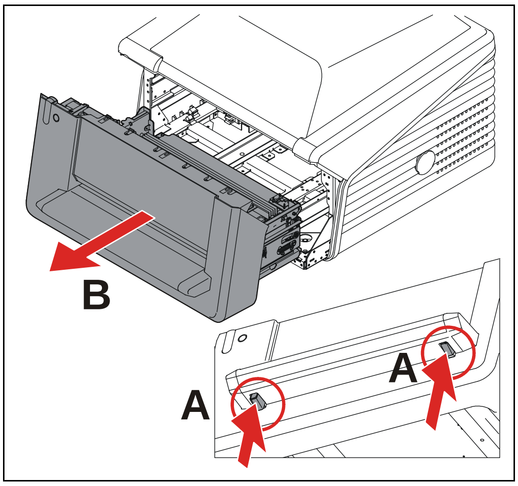


Figure 13

(5) Remove 3 screws of the top cover.

(6) Remove top cover.

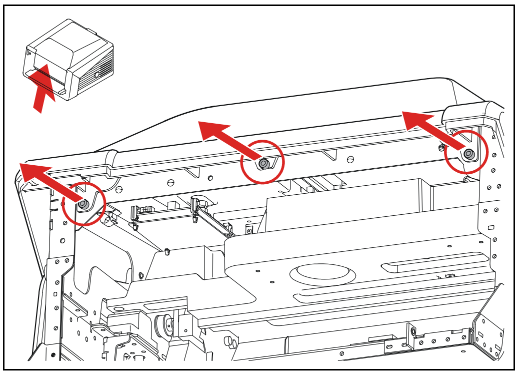


Figure 14

(7) Remove 3 screws of the right cover.

(8) Remove right cover.

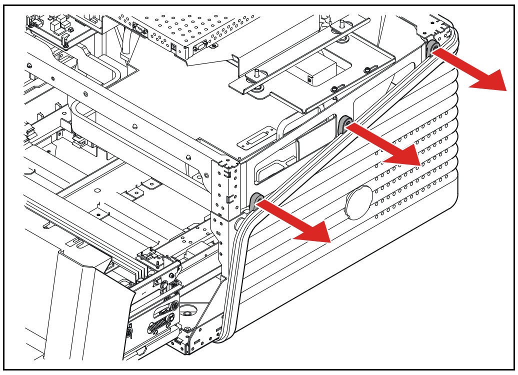


Figure 15

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the green light at the user interface lights up (takes approx. 1,5 min.).

Result: The right cover is replaced.

1.4 Replacing the Top Cover

REQUIRED SPARE PART*:
Type 5175/100: CM+9 5175 9200 0
Type 5175/110: CM+9 5175 1540 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

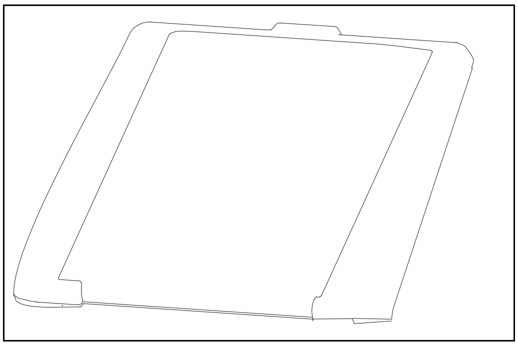
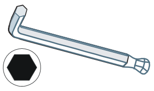


Figure 16

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
5 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

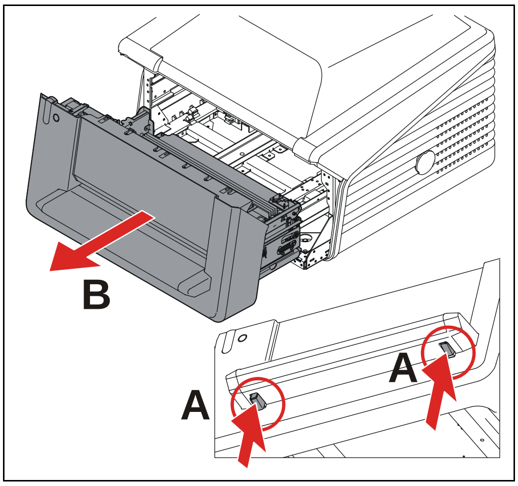


Figure 17

(5) Remove 3 screws of the top cover.

(6) Remove top cover.

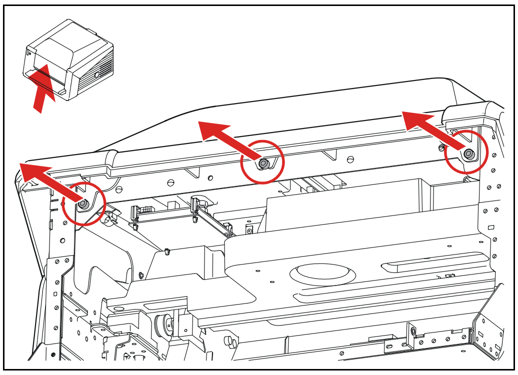


Figure 18

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the green light at the user interface lights up (takes approx. 1,5 min.).

Result: The top cover is replaced.

2 Replacements in Cassette Unit

2.1 Replacing the Antistatic Brush Cassette Unit Entry

REQUIRED SPARE PART*:
CM+9 5160 5006 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

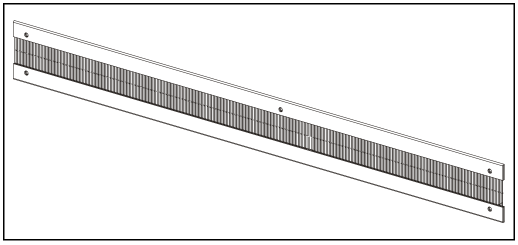
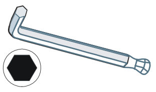
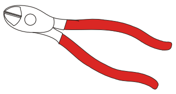


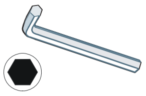
Figure 19

REQUIRED TOOLS:

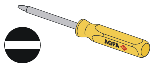


3 mm,
with ball-shaped head





2 mm



Medium size

REQUIRED TIME:
90 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

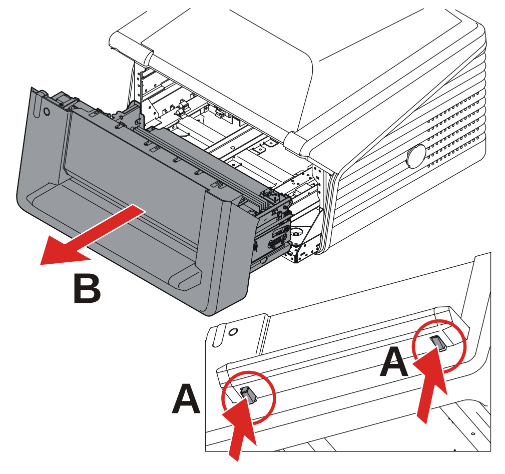


Figure 20

(5) Remove 3 upper screws.

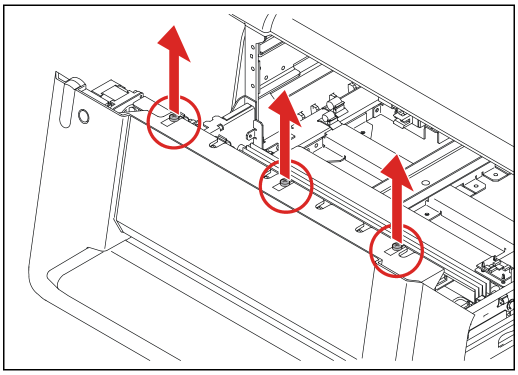


Figure 21

(6) Open 3 lower screws at front cover a few turns.

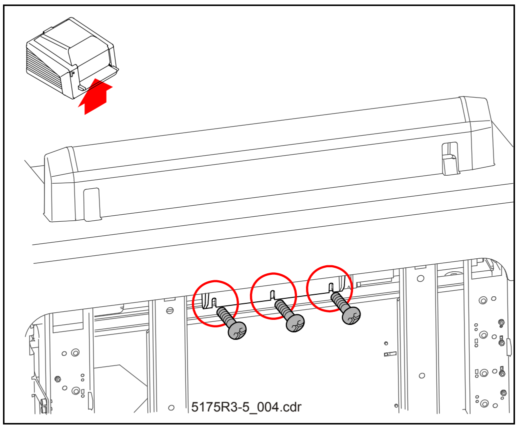


Figure 22

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 23.

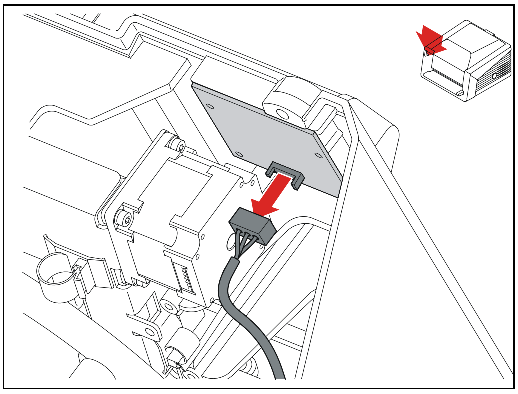


Figure 23

(9) Disconnect ground cable at left hand side.

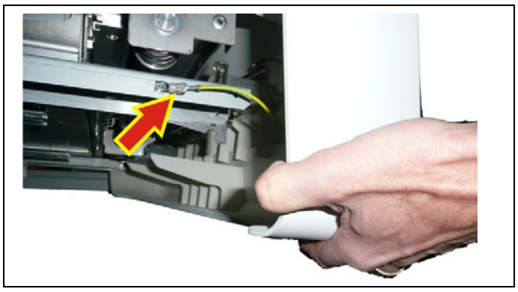


Figure 24

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

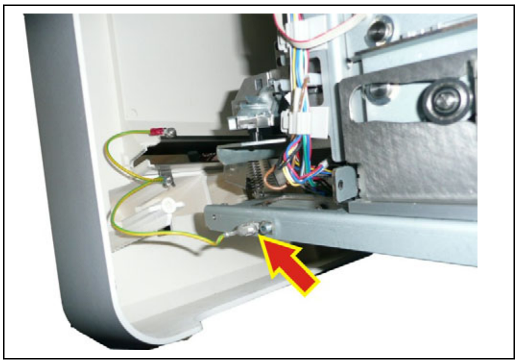


Figure 25

(12) Take out cleaning brush holder.

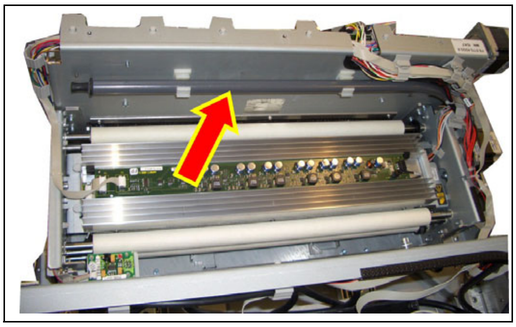


Figure 26

(13) Remove screw at erasure unit.

(14) Disconnect two cables at erasure unit.

(15) Take out erasure unit.

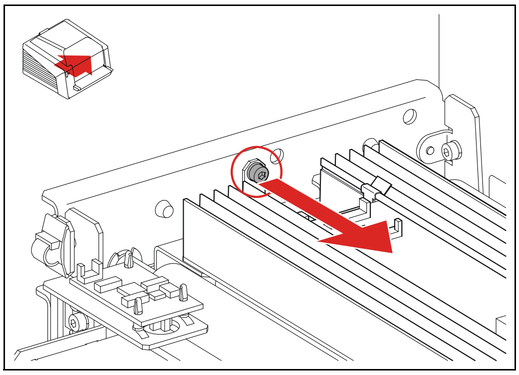


Figure 27

CAUTION:

IP jams possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(16) Slide IP guide plate to the left and lift it out.

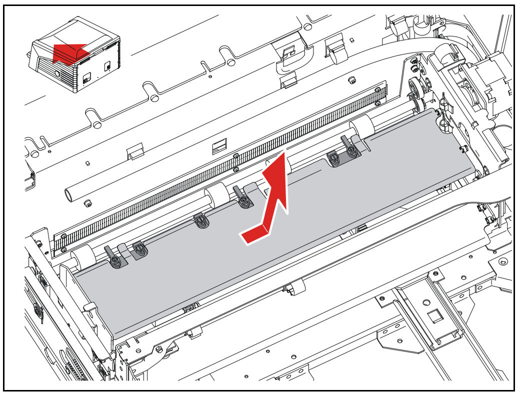


Figure 28

(17) Disconnect cable at roller IP sensor.

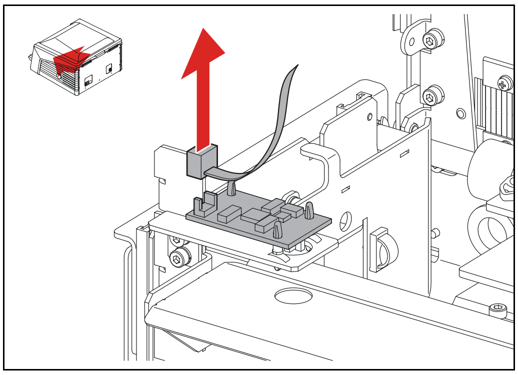


Figure 29

(18) Open three cable holders at right hand side.

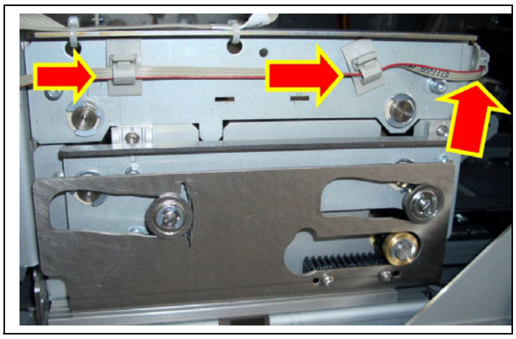


Figure 30

(19) Open cable holders at left hand side.

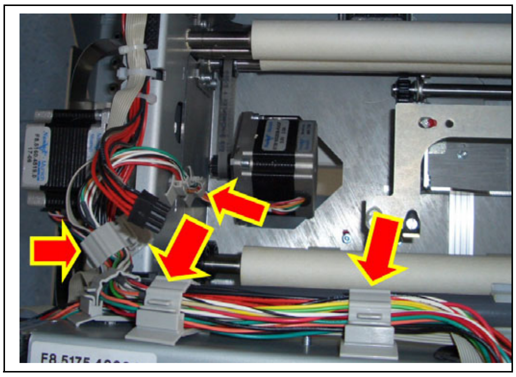


Figure 31

(20) Cut two cable ties at upper part transport unit right hand side.

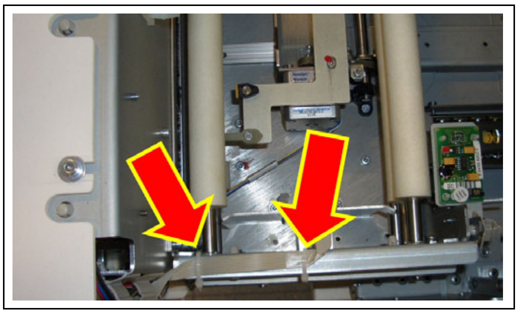


Figure 32

(21) Cut one cable tie at upper part transport unit cable harness left hand side.

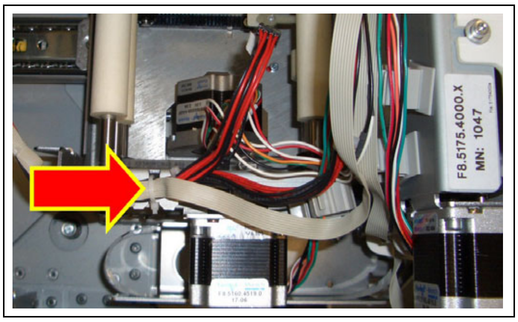


Figure 33

(22) Unplug P4, P17, P25 and P29 at IP handling board.

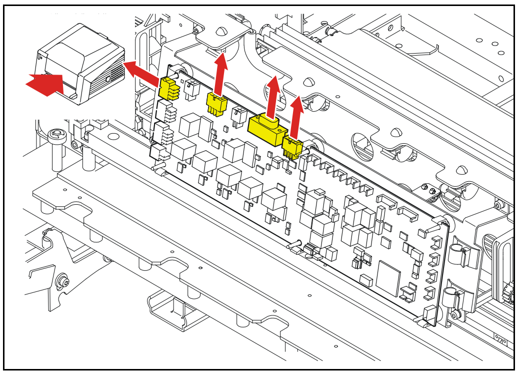


Figure 34

(23) Remove 2 screws of upper part transport unit right hand side.

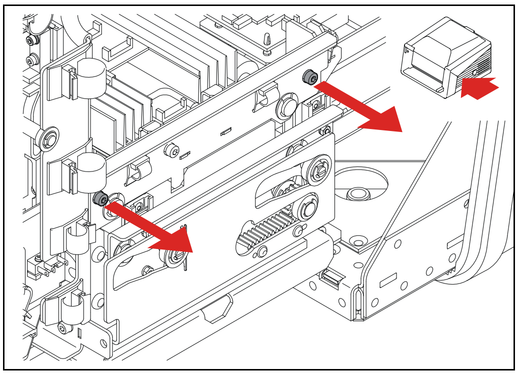


Figure 35

(24) Remove 2 screws of upper part transport unit left hand side.

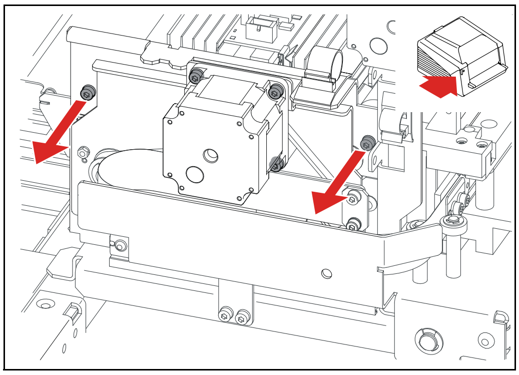


Figure 36

(25) Take off upper part transport unit.

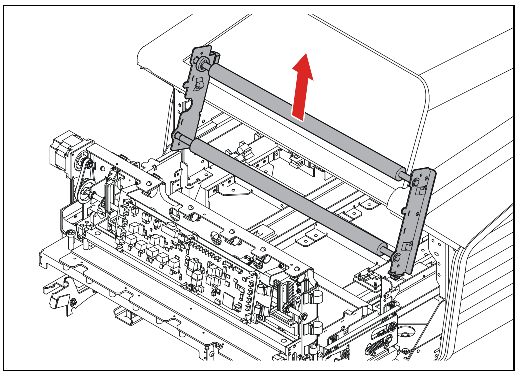


Figure 37

(26) With a screwdriver remove two ball bearings at transport unit left hand side.

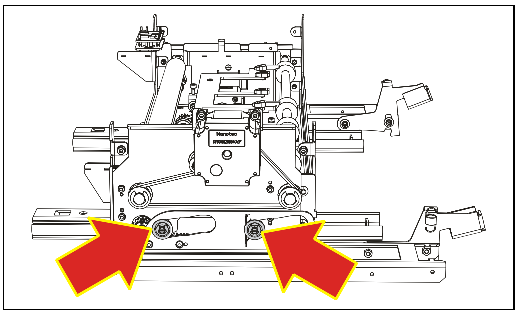


Figure 38

(27) Remove two ball bearings at transport unit right hand side.

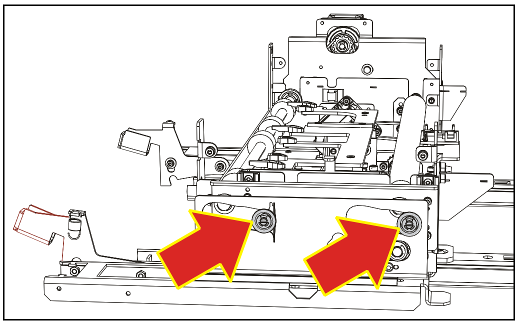


Figure 39

(28) Take off the complete lower transport unit.

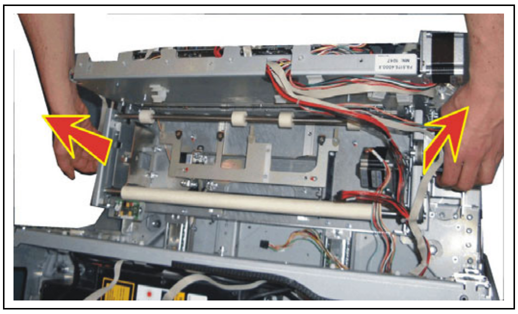


Figure 40

(29) Remove 3 screws at each brush.

(30) Take out the brushes.

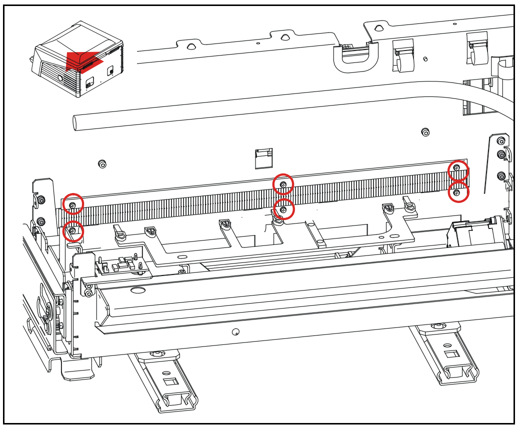


Figure 41

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The Antistatic Brush Cassette Unit Entry is replaced.

2.2 Replacing the Cassette Edge Sensor

REQUIRED SPARE PART*:
CM+9 5175 9060 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

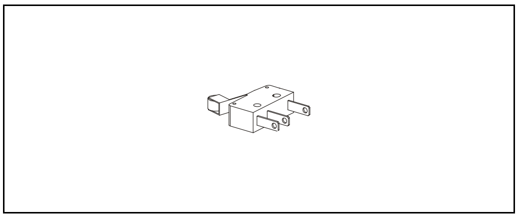
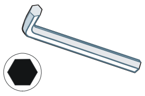
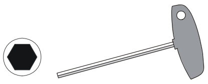


Figure 42

REQUIRED TOOLS:



3 mm



1,5 mm

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

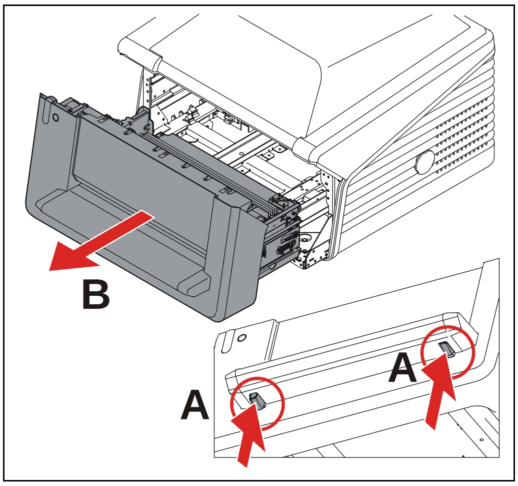


Figure 43

(5) Remove 3 upper screws.

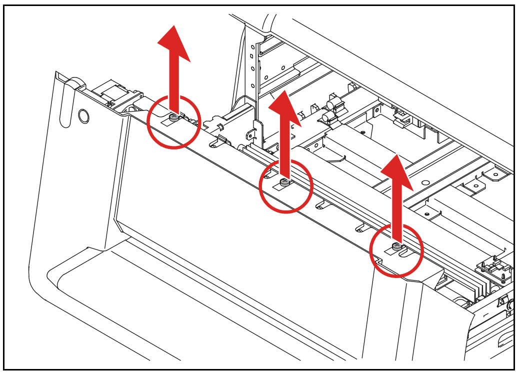


Figure 44

(6) Open 3 lower screws at front cover a few turns.

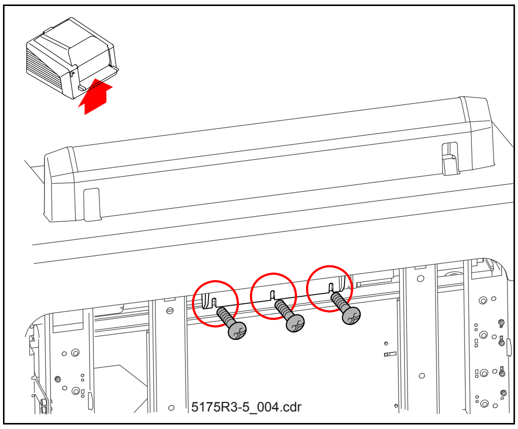


Figure 45

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 46.

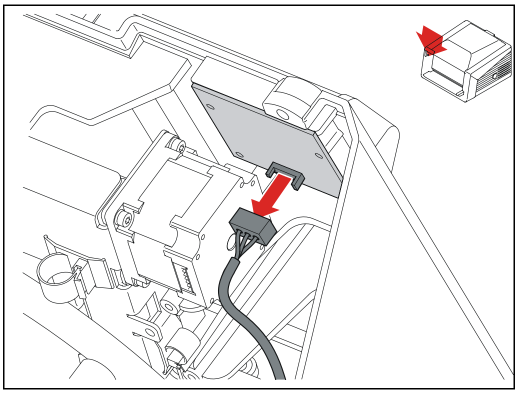


Figure 46

(9) Disconnect ground cable at left hand side.

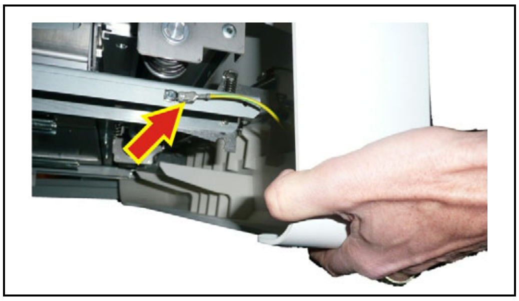


Figure 47

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

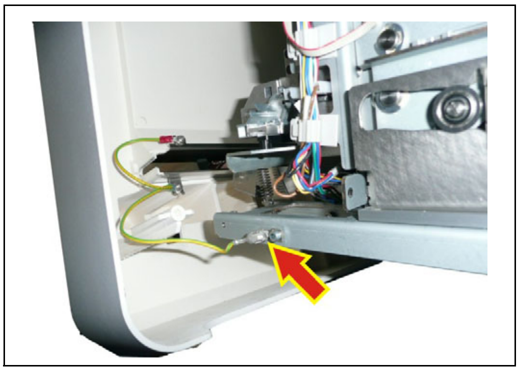


Figure 48

CAUTION:

The nuts of the cassette edge sensor mounting can be lost very easily.

- Only loosen the screws of the cassette edge sensor approx. 1 to 2 turns.
- Always have a "small parts kit*" CM+9 5175 9070 1 with you: This contains 2 spare screws and nuts for the cassette edge sensor mounting.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

(12) Remove cables (1) at cassette edge sensor.

(13) Open the two screws (2) **approx. 1 to 2 turns.**

(14) Slide out the cassette edge sensor (3).

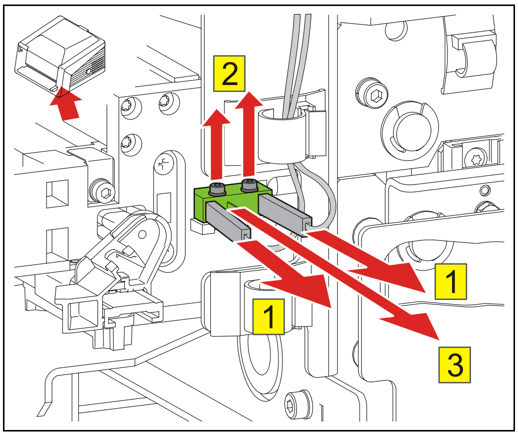


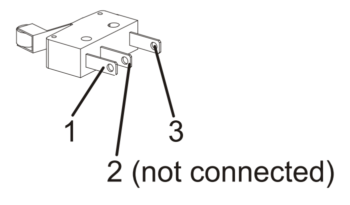
Figure 49

ASSEMBLY:

(1) Mount in reverse order. See important note below.

IMPORTANT:

Pin 2 is not connected at the cassette edge sensor.



MECHANICAL ADJUSTMENT:

(1) Perform a "cassette edge sensor" adjustment. Refer to chapter 3.6, adjustments.

Verification:
(1) Insert cassette with unexposed IP in the digitizer.
(2) At the workstation select examination type “System diagnosis – Flatfield”.
(3) Select “ID” to identify the image: Scanning starts.
(4) Confirm that the image arrives at the workstation.
(5) Reject the image.

Result: The cassette edge sensor is replaced.

2.3 Replacing the Cassette Fixation Steel Band

The replacement instructions for the Cassette Fixation Steel band, spare part number* CM+9 5175 5830 0, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

2.4 Replacing the Cassette Fixation Unit

The replacement instructions for the Cassette Fixation Unit, spare part number* CM+9 5175 9040 2, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

2.5 Replacing the Cassette Opener Unit

REQUIRED SPARE PART*:
CM+9 5175 5200 2

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

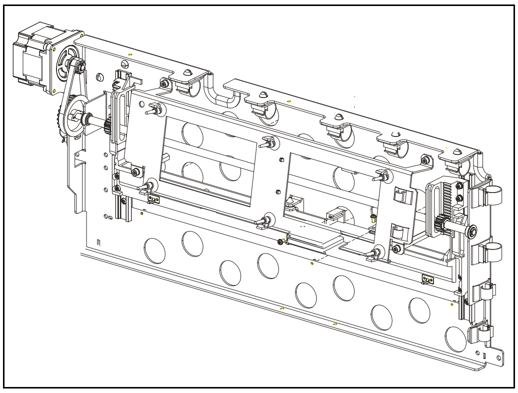
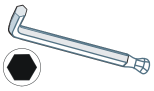


Figure 50

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
60 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

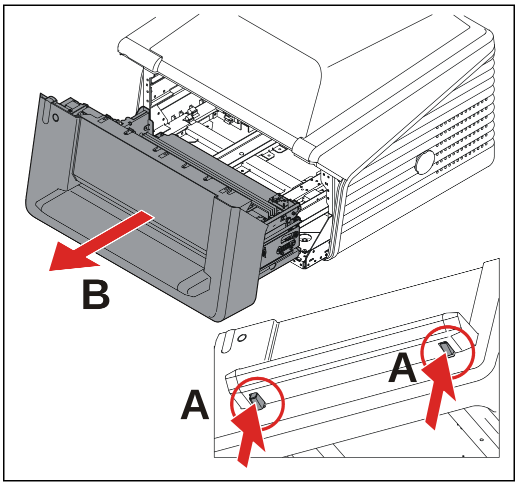


Figure 51

(5) Remove 3 upper screws.

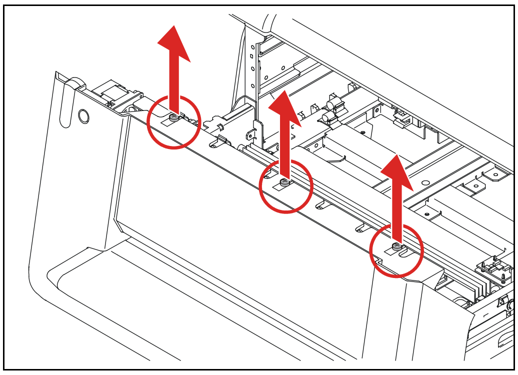


Figure 52

(6) Open 3 lower screws at front cover a few turns.

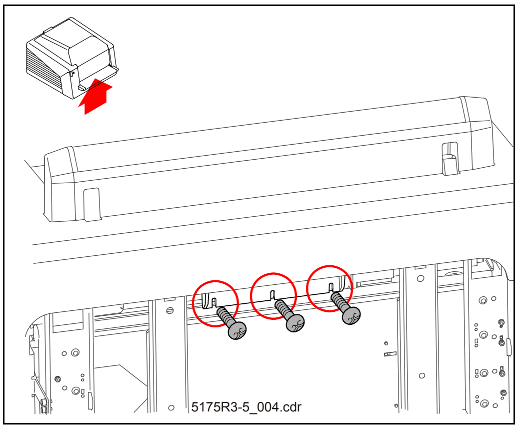


Figure 53

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 54.

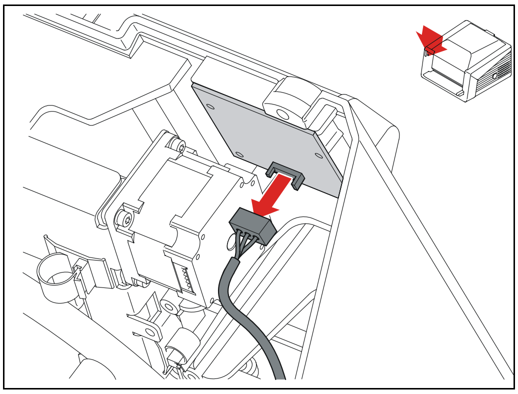


Figure 54

(9) Disconnect ground cable at left hand side.

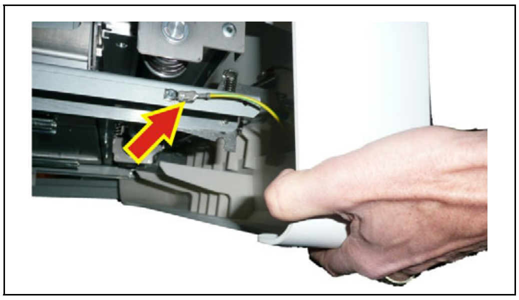


Figure 55

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

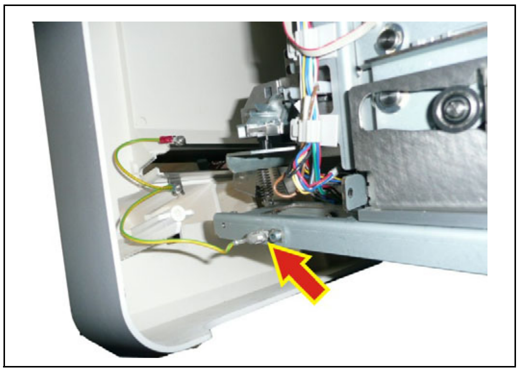


Figure 56

(12) Take out cleaning brush holder.

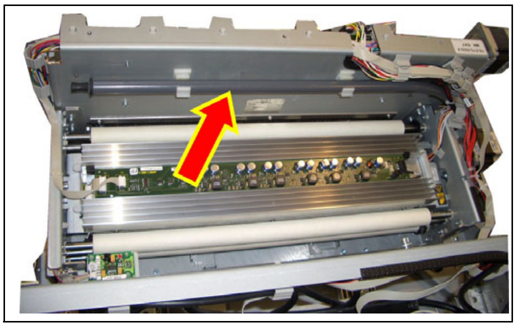


Figure 57

(13) Remove screw at erasure unit.

(14) Disconnect two cables at erasure unit.

(15) Take out erasure unit.

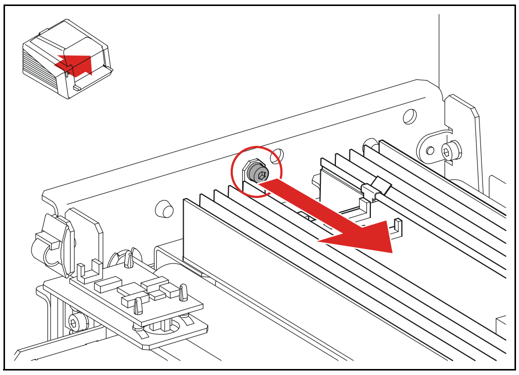


Figure 58

CAUTION:

IP jams possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(16) Slide IP guide plate to the left and lift it out.

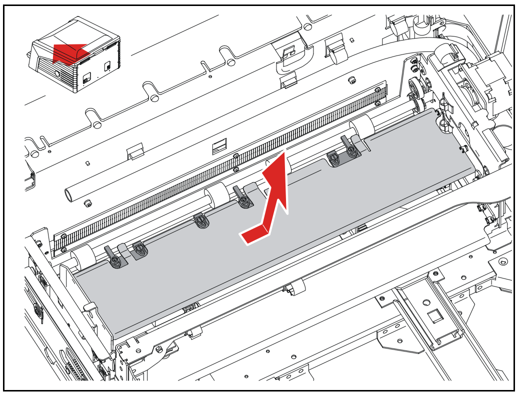


Figure 59

(17) Disconnect cable at roller IP sensor.

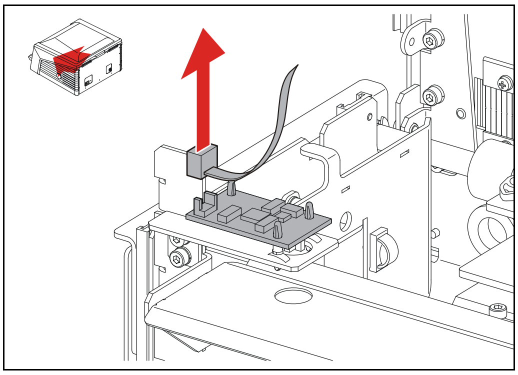


Figure 60

(18) Open three cable holders at right hand side.

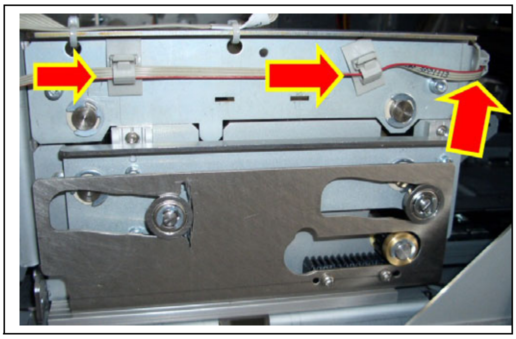


Figure 61

(19) Open five cable holders at left hand side.

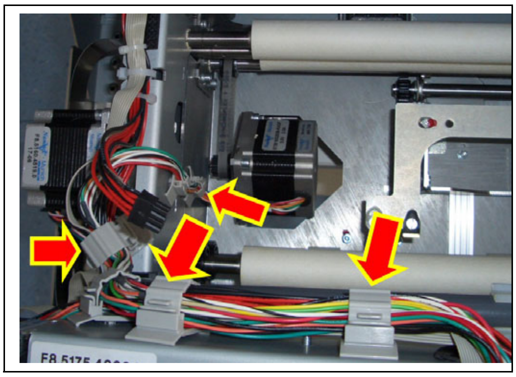


Figure 62

(20) Cut two cable ties at upper part transport unit right hand side.

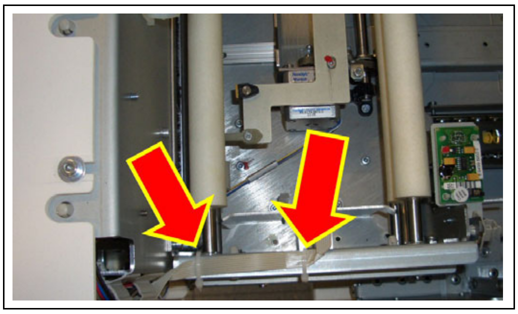


Figure 63

(21) Cut one cable tie at upper part transport unit cable harness left hand side.

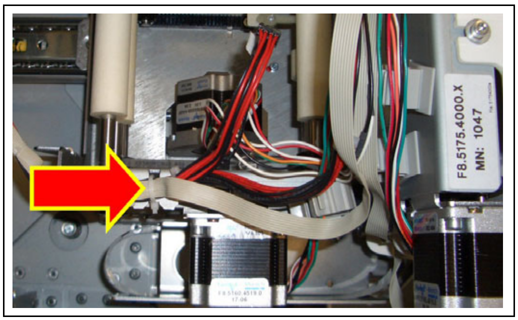


Figure 64

(22) Remove 2 screws of upper part transport unit right hand side.

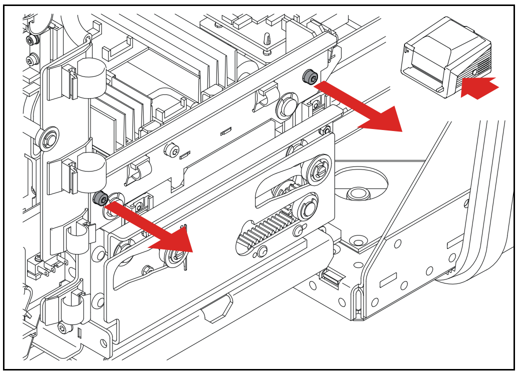


Figure 65

(23) Remove 2 screws of upper part transport unit left hand side.

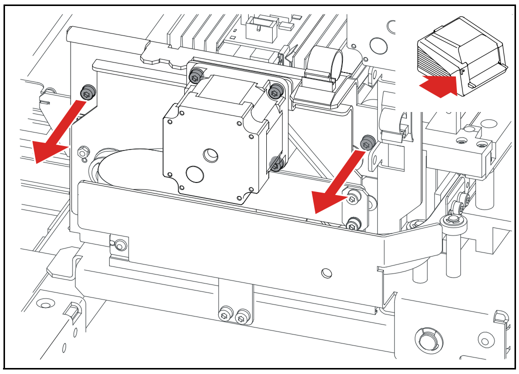


Figure 66

(24) Take off upper part transport unit.

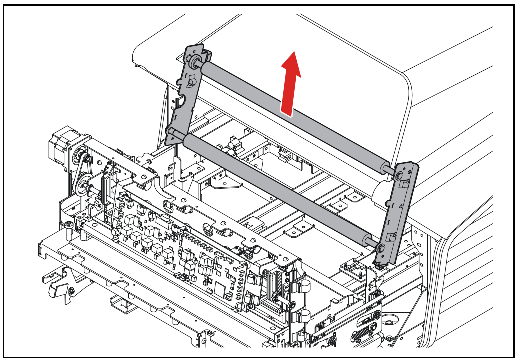


Figure 67

(25) Remove all cables at IP handling board.

(26) Open all cable holders at cassette unit.

(27) Remove IP handling board.

(28) Pull out cable for drawer motor.

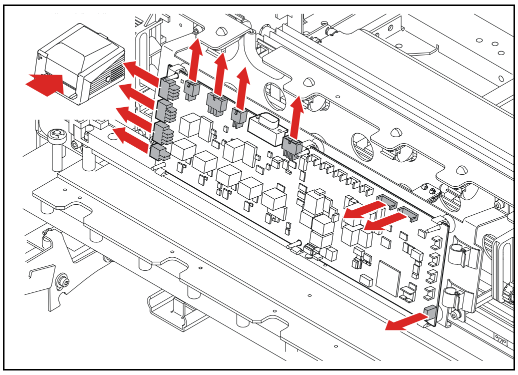


Figure 68

(29) Turn a few turns at spindle of cassette fixation (A).

(30) Remove two screws at the front (B, C).

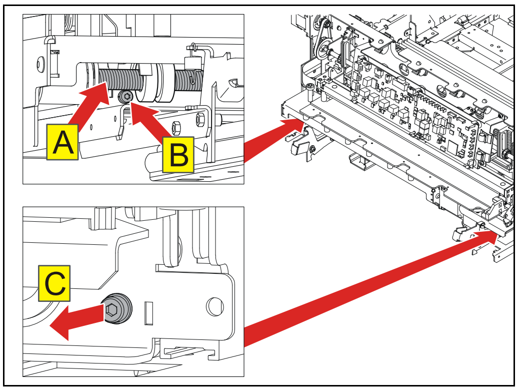


Figure 69

(31) Remove 2 screws at cassette fixation unit.

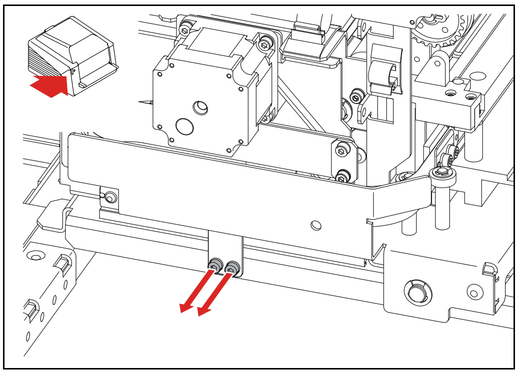


Figure 70

(32) Remove 4 screws in the inner part of the cassette unit.

(33) Take out the cassette unit.

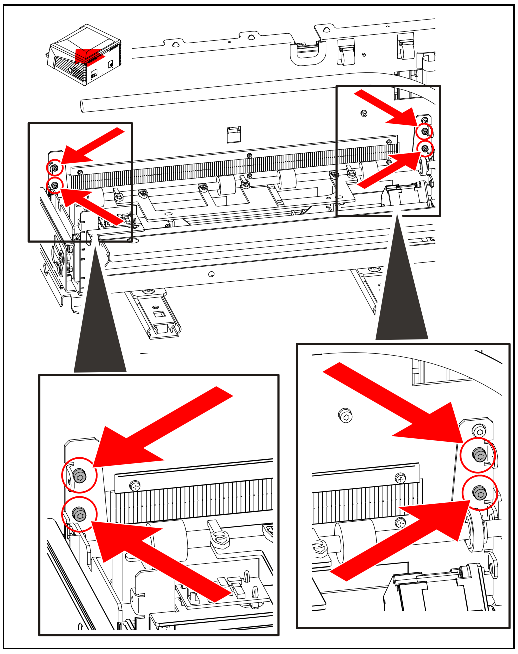


Figure 71

(34) Remove cassette unlocking unit.

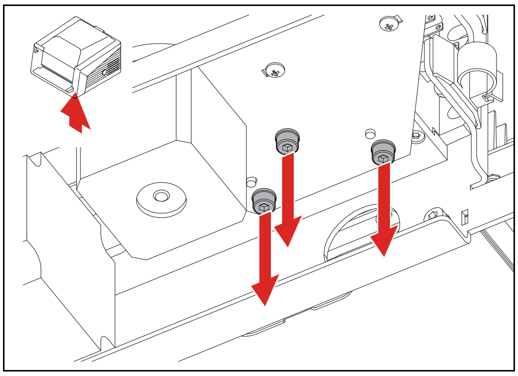


Figure 72

(35) Remove the cassette fixation unit.

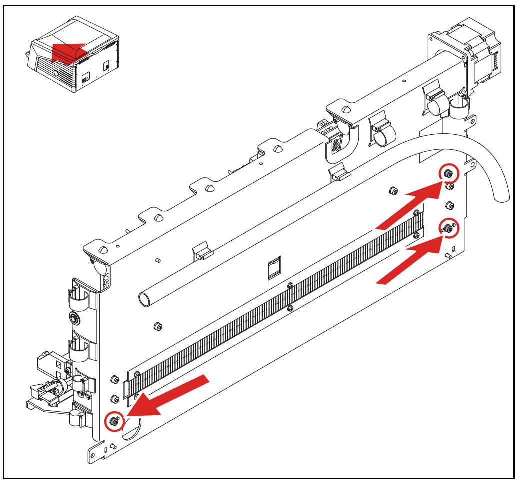


Figure 73

ASSEMBLY:

(1) Mount the cassette opener unit in reverse order.

CALIBRATION:

(1) Perform a stall calibration for the cassette opener motor.
Refer to chapter 3.6, Adjustments.

Verification:

(1) Insert cassette with unexposed IP in the digitizer.
(2) At the workstation select examination type “System diagnosis – Flatfield”.
(3) Select “ID” to identify the image: Scanning starts.
(4) Confirm that the image arrives at the workstation.
(5) Reject the image.
(6) Repeat steps (1) to (5) with each cassette format the customer is using.

IMPORTANT:

In case the boot-up is not successful, check following:

- Cable is connected at user interface board.
- Cable between chip reader and IP handling board is connected at P 18.

Result: The cassette opener unit is replaced.

2.6 Replacing the Cassette Unlocking Unit

REQUIRED SPARE PART*:
CM+9 5175 5600 2

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

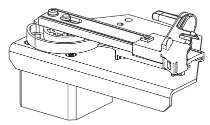
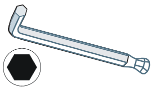


Figure 74

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
60 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

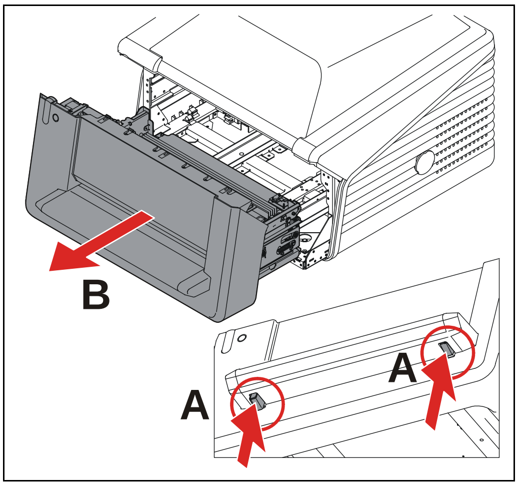


Figure 75

(5) Remove 3 upper screws.

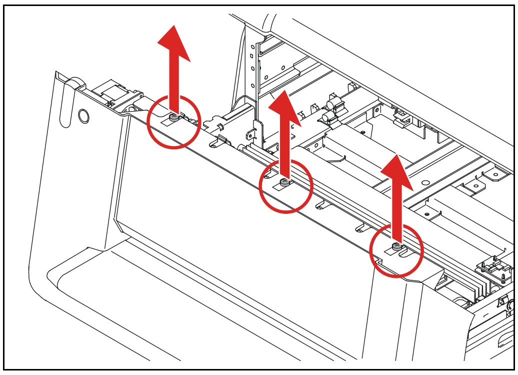


Figure 76

(6) Open 3 lower screws at front cover a few turns.

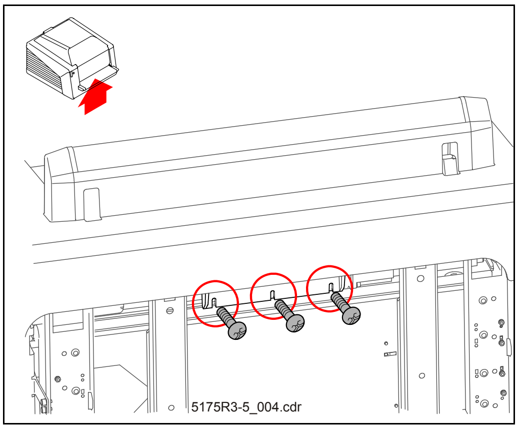


Figure 77

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 78.

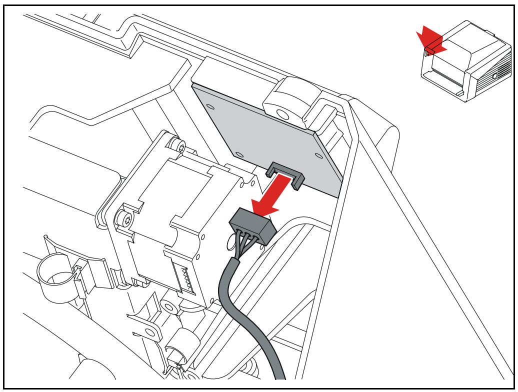


Figure 78

(9) Disconnect ground cable at left hand side.

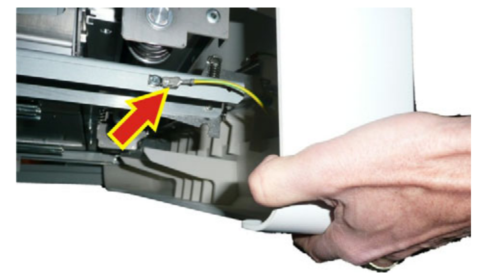


Figure 79

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

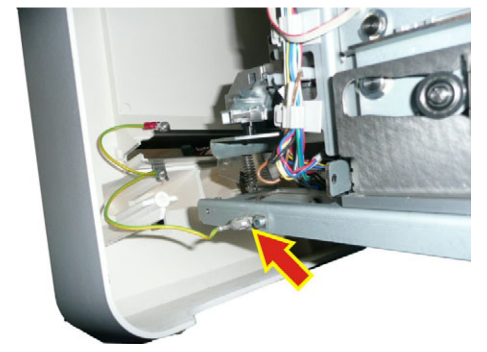


Figure 80

(12) Remove cable at P30 of IP handling board.

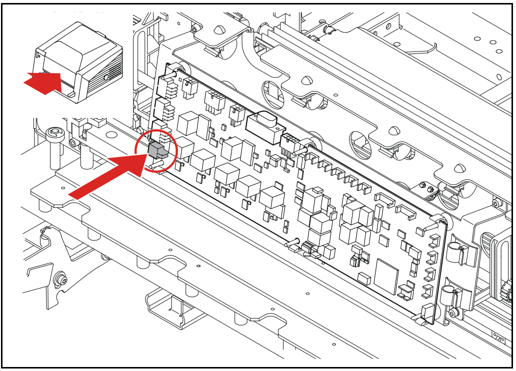


Figure 81

(13) Open cable holders.

(14) Open 3 screws at the lower right hand side.

(15) Remove the cassette unlocking unit.

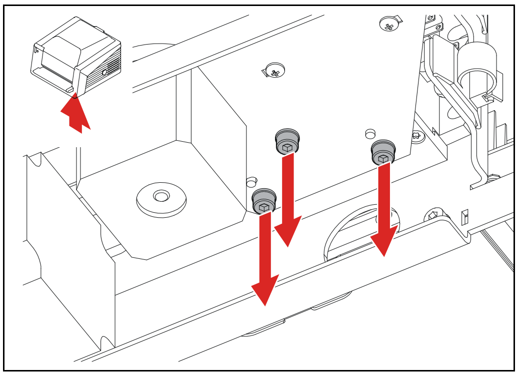


Figure 82

ASSEMBLY:

(1) Mount in reverse order.

CALIBRATION:

(1) Perform a stall calibration for the locking motor.
Refer to chapter 3.6, Adjustments.

Verification:

(1) Insert cassette with unexposed IP in the digitizer.

(2) At the workstation select examination type “System diagnosis – Flatfield”.

(3) Select “ID” to identify the image: Scanning starts.

(4) Confirm that the image arrives at the workstation.

(5) Reject the image.

Result: The cassette unlocking unit is replaced.

2.7 Replacing the Chip Reader

REQUIRED SPARE PART*:
CM+9 0486 1417 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

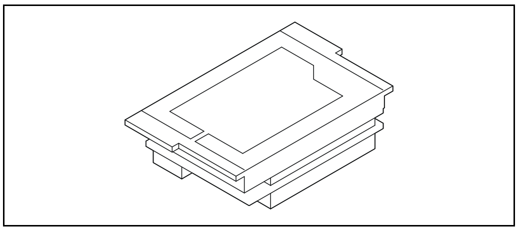
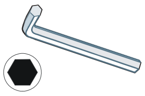
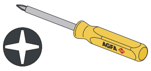


Figure 83

REQUIRED TOOLS:



3 mm



Small size

REQUIRED TIME:
60 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

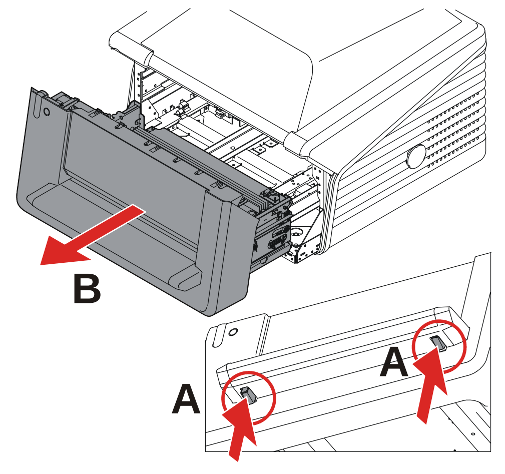


Figure 84

(5) Remove 3 upper screws.

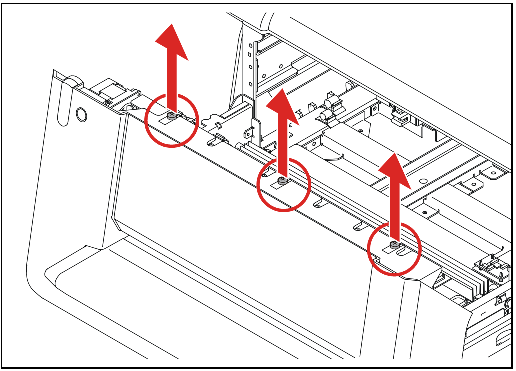


Figure 85

(6) Open 3 lower screws at front cover a few turns.

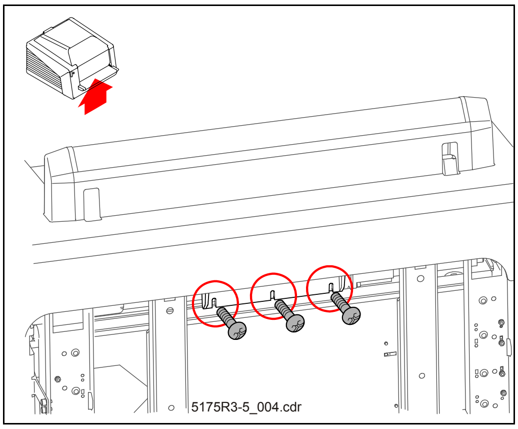


Figure 86

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 87.

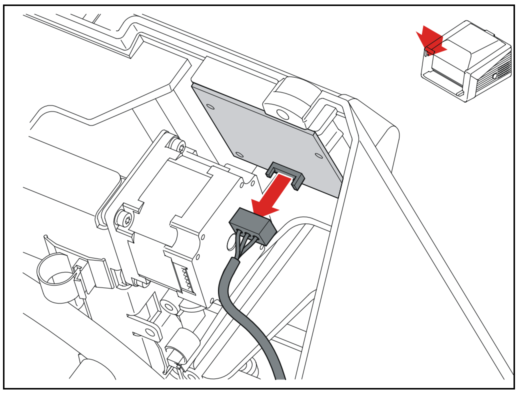


Figure 87

(9) Disconnect ground cable at left hand side.

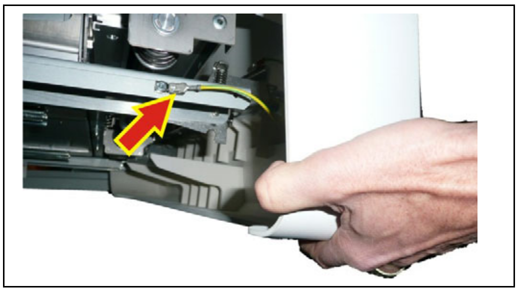


Figure 88

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

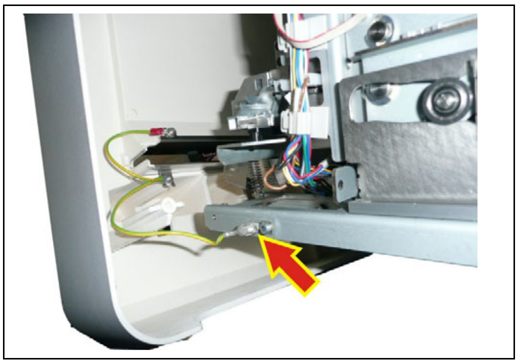


Figure 89

(12) Disconnect all cables at the IP handling board.

(13) Open the 6 mounting clips.

(14) Remove the IP handling board.

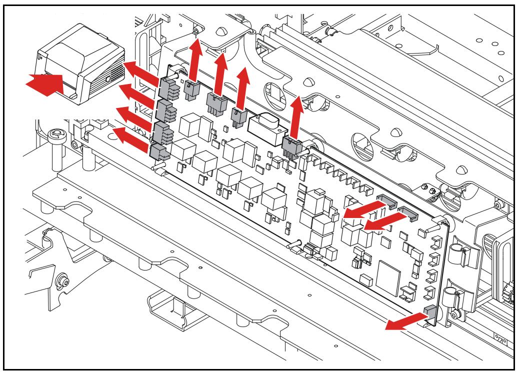


Figure 90

(15) Pull at the toothed belt to open the cassette opener.

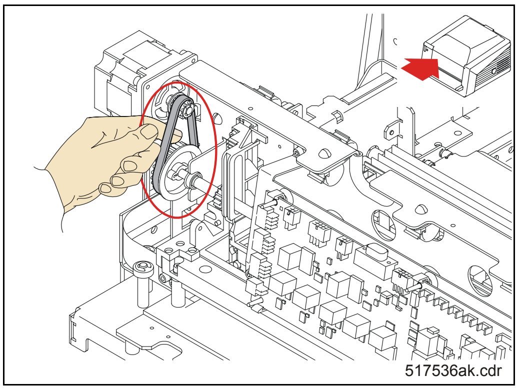


Figure 91

(16) Disconnect cable at chip reader.

(17) Remove screw.

(18) Remove chip reader.

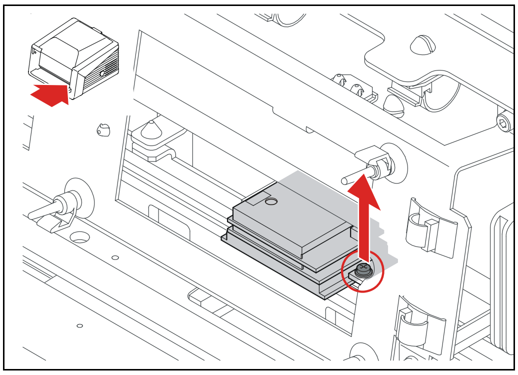


Figure 92

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The Chip Reader is replaced.

2.8 Replacing the Drawer Unit

The replacement instructions for the Drawer Unit, spare part number* CM+9 5175 6100 4, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

2.9 Replacing the Erasure Unit

REQUIRED SPARE PART*:
CM+9 5175 3600 1

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

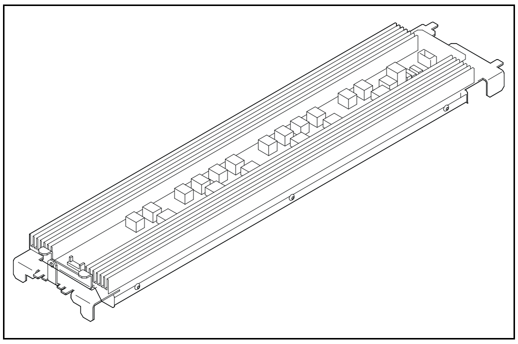
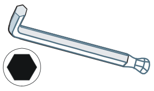


Figure 93

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

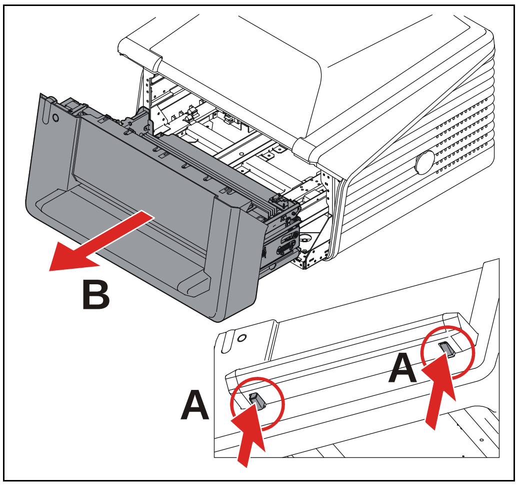


Figure 94

(5) Remove screw at erasure unit.

(6) Disconnect two cables at erasure unit.

(7) Take out erasure unit.

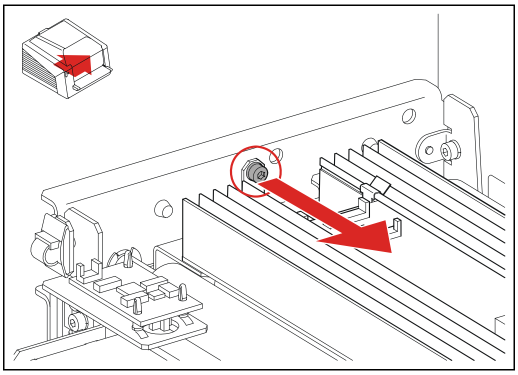


Figure 95

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The erasure unit is replaced.

2.10 Replacing the Transport Unit Ball Bearings

REQUIRED SPARE PART*:
CM+9 5175 6340 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

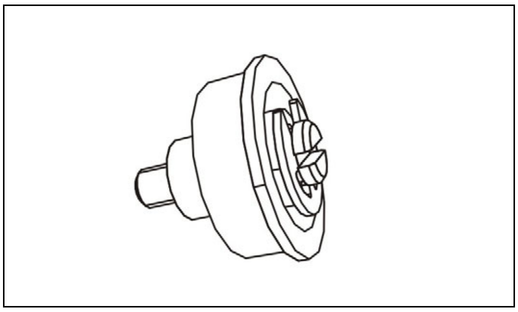
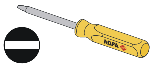


Figure 96

REQUIRED TOOLS:



Medium size

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

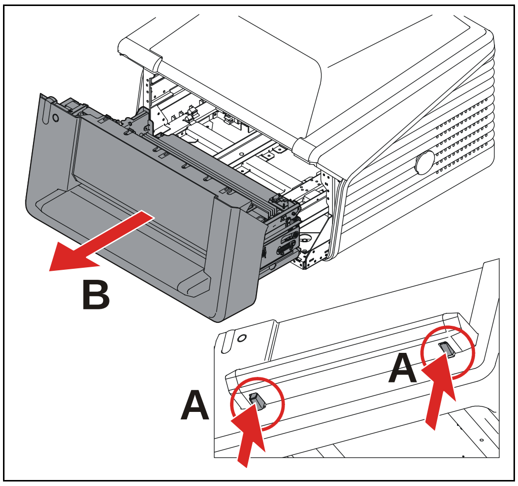


Figure 97

(5) With a screwdriver remove required bearing at right hand side (see Figure 101) or left hand side (see Figure 99).

See NOTE below.

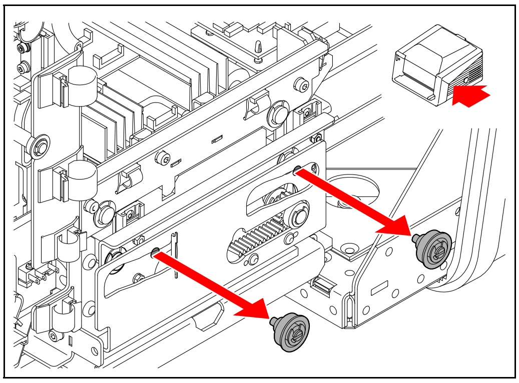


Figure 98

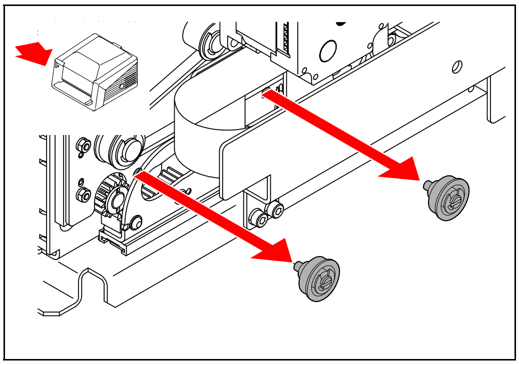


Figure 99

NOTE:

As the ball bearings are secured with Loctite, some force has to be applied to remove the ball bearings.

For mounting of the ball bearings it is not required to secure them via Loctite again.

ASSEMBLY:

(1) Mount in reverse order.

NOTE:

To support that the ball bearing fits in its rail, lift the inner side plate slightly up.

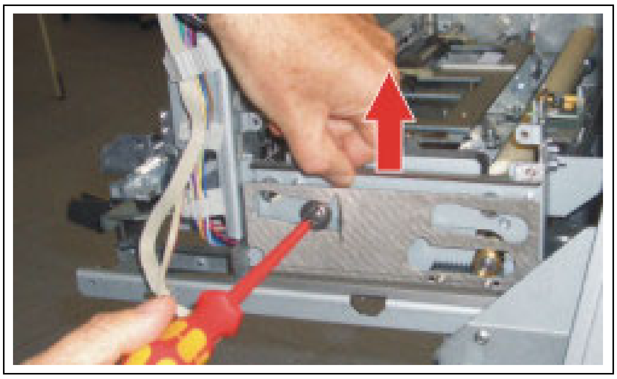


Figure 100

Verification:

(1) Switch on the digitizer.
(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).
(3) Insert cassette with unexposed IP in the digitizer.
(4) At the workstation select examination type “System diagnosis – Flatfield”.
(5) Select “ID” to identify the image: Scanning starts.
(6) Confirm that the image arrives at the workstation.
(7) Reject the image.

Result: The transport unit ball bearing is replaced.

2.11 Replacing the Input Rollers

The replacement instructions for the Input Rollers, spare part number* CM+9 5175 9030 2, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

2.12 Replacing the Side Plate Transport Unit (left Hand Side)

The replacement instructions for the Side Plate Transport Unit (left Hand Side), spare part number* CM+9 5175 9890 0, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

2.13 Replacing the IP Handling Board

The replacement instructions for the IP Handling Board, spare part number* CM+9 5175 5230 1, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

2.14 Replacing the Permanent Magnets

REQUIRED SPARE PART*:
CM+9 5175 6125 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

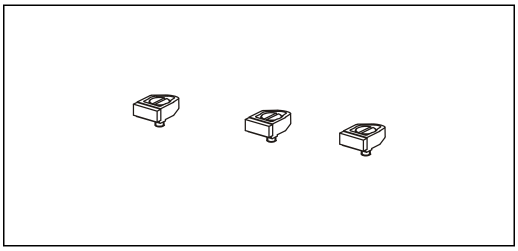


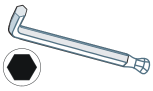
Figure 101

IMPORTANT:

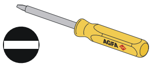
Spare part CM+9 5175 6125 0 contains all 3 permanent magnets.

It is recommended to replace all 3 magnets together.

REQUIRED TOOLS:



3 mm,
with ball-shaped head



Medium size

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

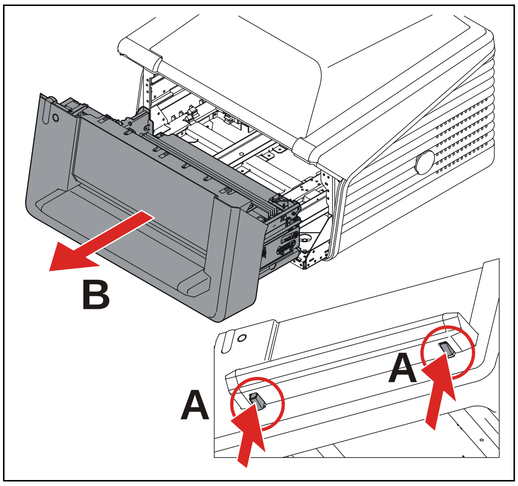


Figure 102

(5) Remove 3 upper screws.

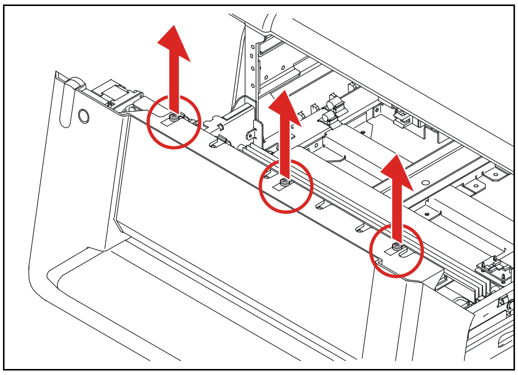


Figure 103

(6) Open 3 lower screws at front cover a few turns.

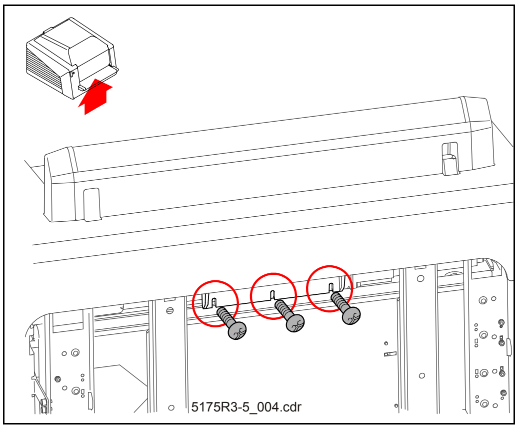


Figure 104

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 105.

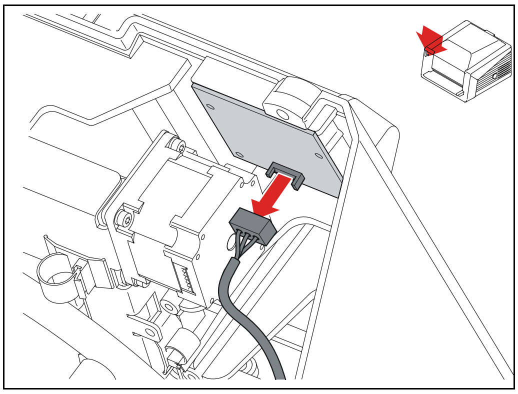


Figure 105

(9) Disconnect ground cable at left hand side.

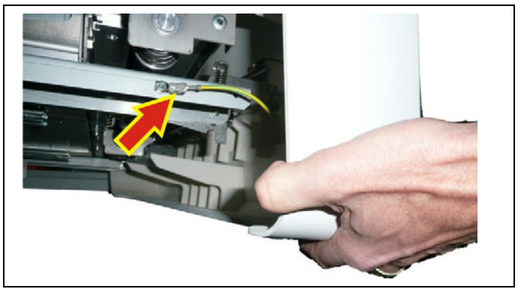


Figure 106

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

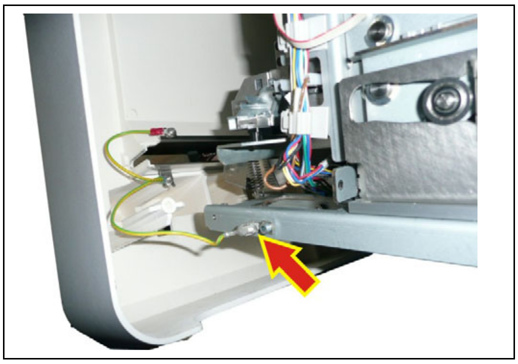


Figure 107

(12) Remove screw at erasure unit.

(13) Disconnect two cables at erasure unit.

(14) Take out erasure unit.

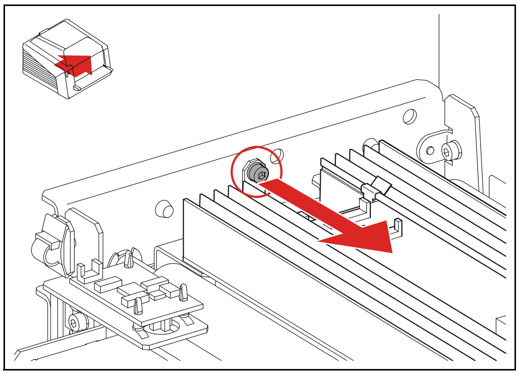


Figure 108

CAUTION:

IP jams possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(15) Slide IP guide plate to the left and lift it out.

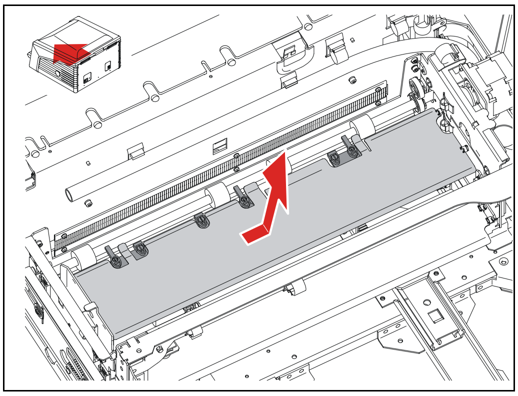


Figure 109

(16) Remove screws at magnets.

(17) Remove magnets.

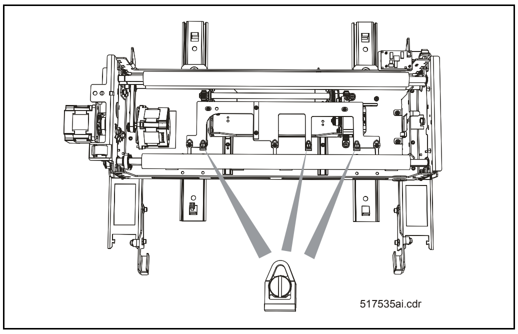


Figure 110

ASSEMBLY:

(1) Mount in reverse order.

Verification:
(1) Switch on the digitizer.
(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).
(3) Insert cassette with unexposed IP in the digitizer.
(4) At the workstation select examination type “System diagnosis – Flatfield”.
(5) Select “ID” to identify the image: Scanning starts.
(6) Confirm that the image arrives at the workstation.
(7) Reject the image.

Result: The permanent magnets are replaced.

2.15 Replacing the Drawer Motor (M4)

The replacement instructions for the Drawer Motor (M4), spare part number* CM+9 5175 8690 0, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

2.16 Replacing the Fixer Stepper Motor (M1)

REQUIRED SPARE PART*:
CM+9 5175 5810 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

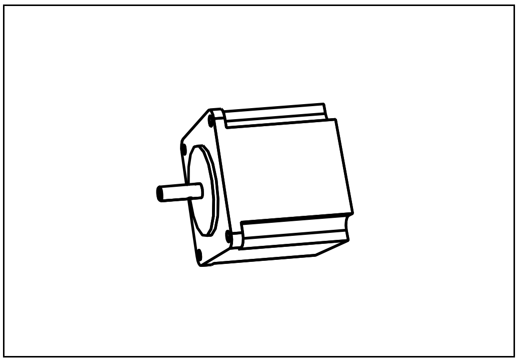
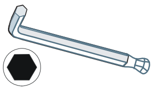


Figure 111

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

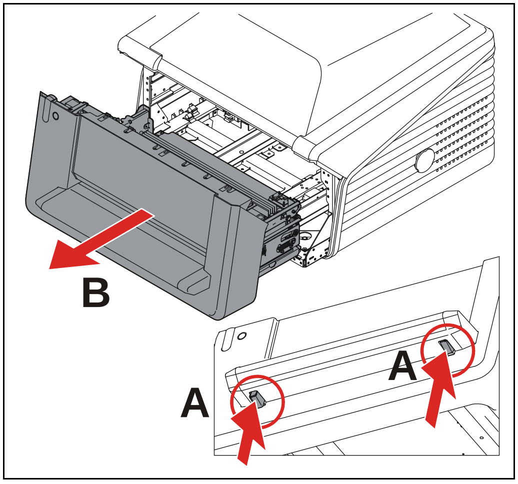


Figure 112

(5) Remove 3 upper screws.

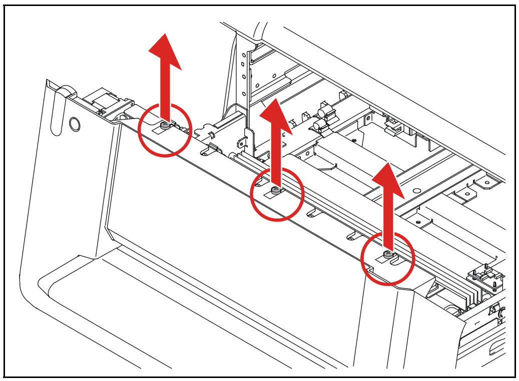


Figure 113

(6) Open 3 lower screws at front cover a few turns.

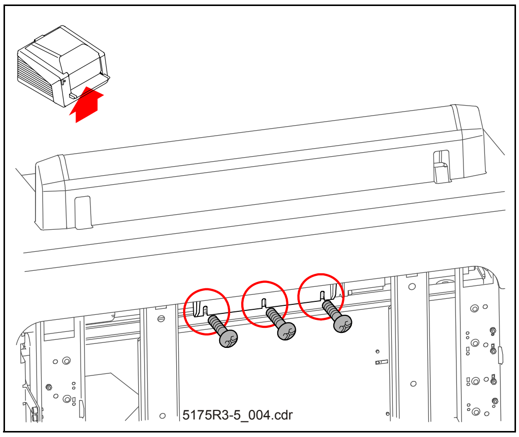


Figure 114

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 115.

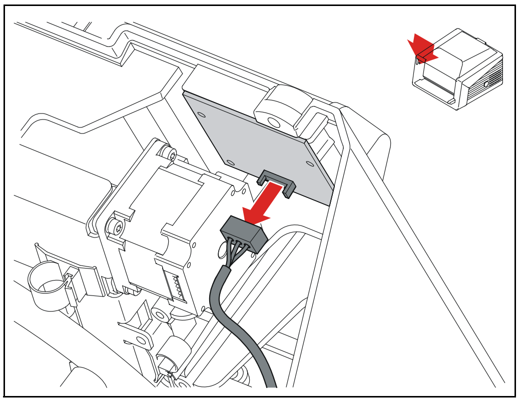


Figure 115

(9) Disconnect ground cable at left hand side.

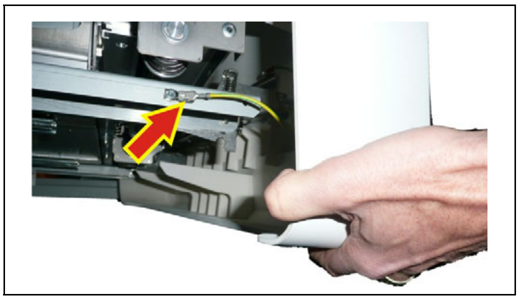


Figure 116

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

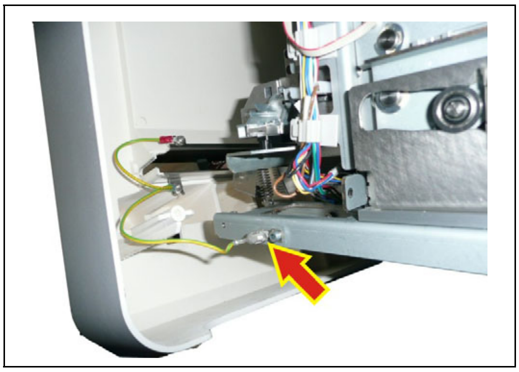


Figure 117

(12) Remove cable at P23 of IP handling board.

(13) Open cable holders.

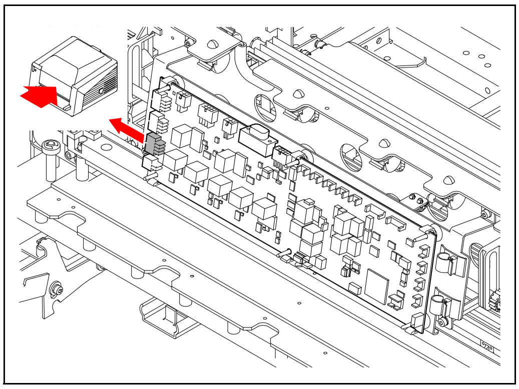


Figure 118

(14) Open 3 screws at the fixer stepper motor (only 2 screws are shown in Figure 119).

(15) Remove the fixer stepper motor.

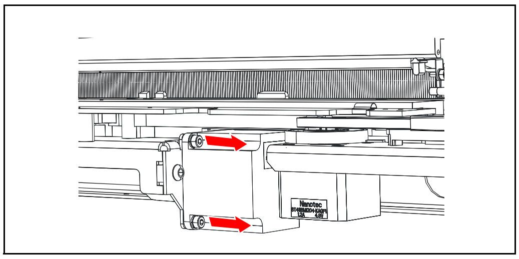


Figure 119

ASSEMBLY:

(1) Mount in reverse order. Observe IMPORTANT note below.

IMPORTANT:

Mount the motor with the motor cable outlet as shown in the figure enclosed:

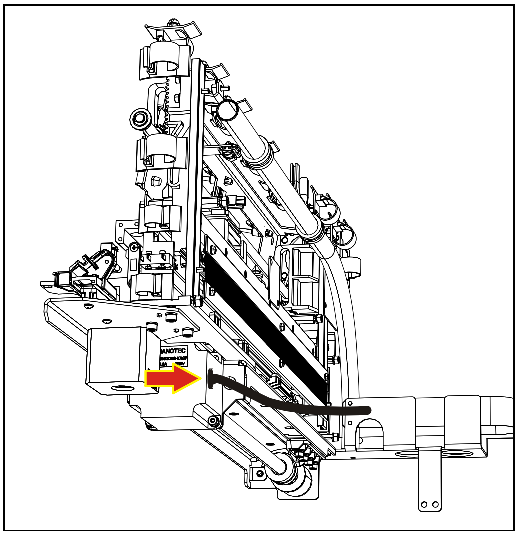


Figure 120

CALIBRATION:

(1) Perform a stall calibration for the fixer stepper motor.
Refer to chapter 3.6, Adjustments.

Verification:

(1) Insert cassette with unexposed IP in the digitizer.

(2) At the workstation select examination type “System diagnosis – Flatfield”.

(3) Select “ID” to identify the image: Scanning starts.

(4) Confirm that the image arrives at the workstation.

(5) Reject the image.

2.17 Replacing the Opener Stepper Motor (M3)

REQUIRED SPARE PART*:
CM+9 5175 4519 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

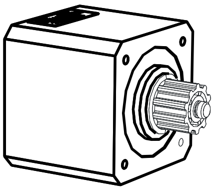
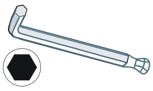


Figure 121

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

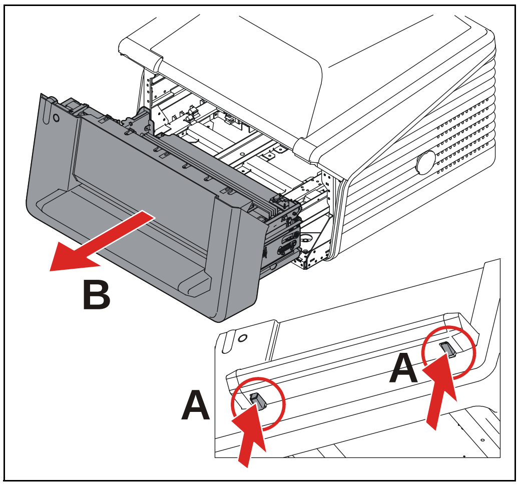


Figure 122

(5) Remove 3 upper screws.

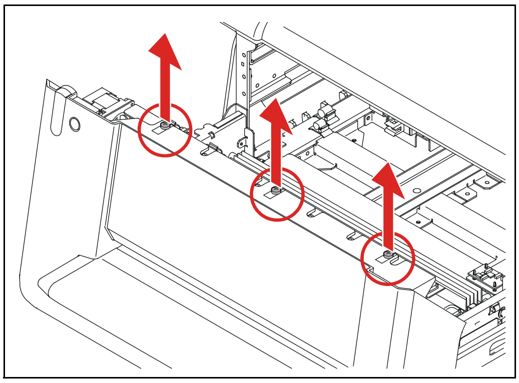


Figure 123

(6) Open 3 lower screws at front cover a few turns.

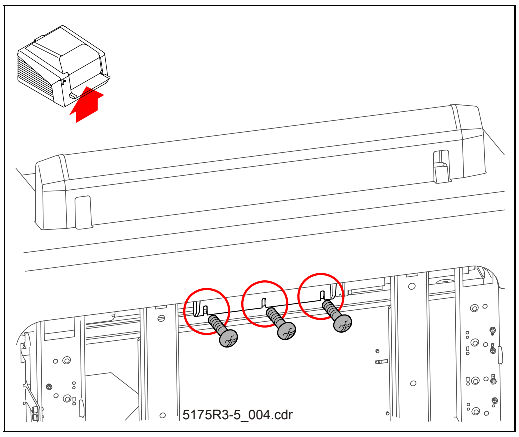


Figure 124

(7) Press two handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 125.

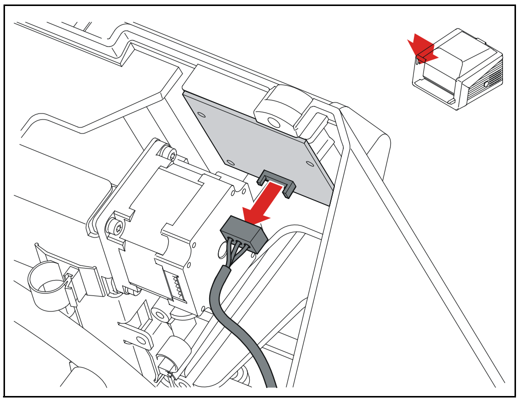


Figure 125

(9) Disconnect ground cable at left hand side.

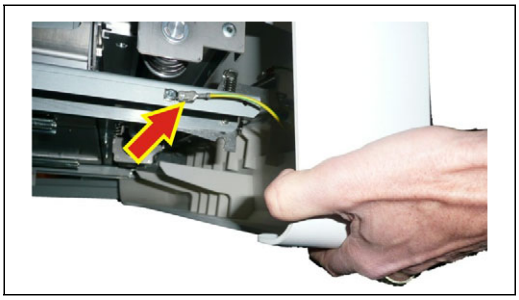


Figure 126

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

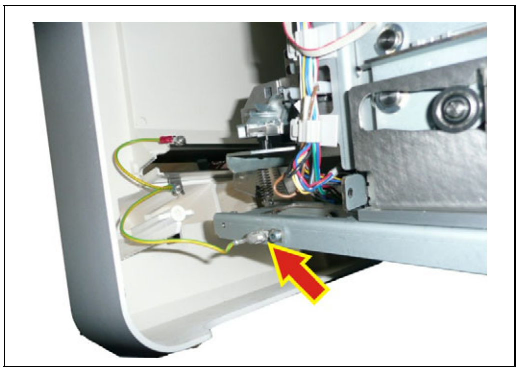


Figure 127

(12) Remove cable at plug P19 of IP handling board.

(13) Open cable holders.

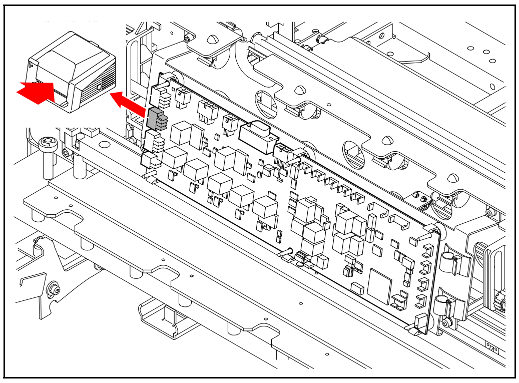


Figure 128

(14) Open 4 screws at the opener stepper motor (only 2 screws are shown in Figure 129).

(15) Remove the opener stepper motor.

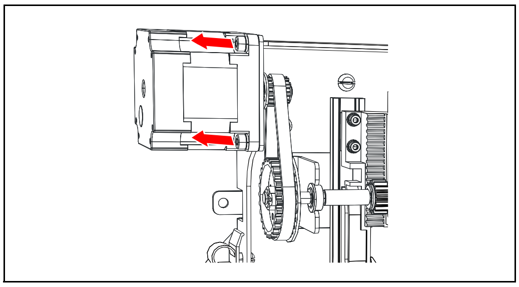


Figure 129

ASSEMBLY:

(1) Mount in reverse order. Observe IMPORTANT note below:

IMPORTANT:

Mount the motor with the motor cable outlet as shown in the figure enclosed:

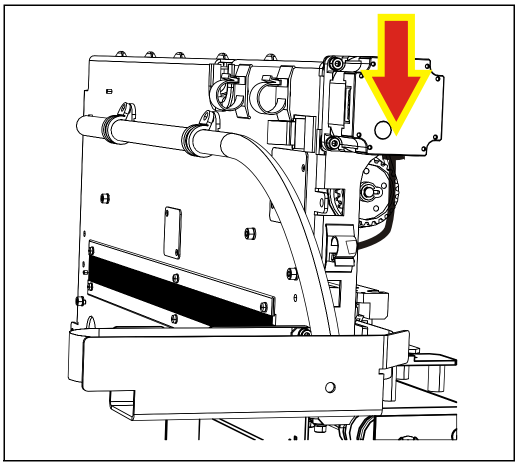


Figure 130

CALIBRATION:

(1) Perform a stall calibration for the opener stepper motor. Refer to chapter 3.6, Adjustments.

Verification

(1) Insert cassette with unexposed IP in the digitizer.

(2) At the workstation select examination type “System diagnosis – Flatfield”.

(3) Select “ID” to identify the image: Scanning starts.

(4) Confirm that the image arrives at the workstation.

(5) Reject the image.

2.18 Replacing the Roller Stepper Motor (M5)

REQUIRED SPARE PART*:
CM+9 5175 6350 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

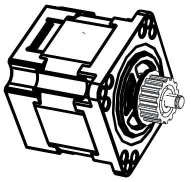
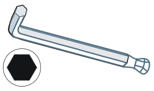


Figure 131

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

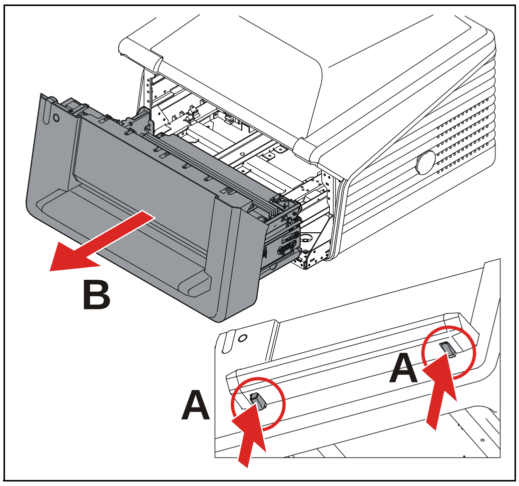


Figure 132

(5) Remove 3 upper screws.

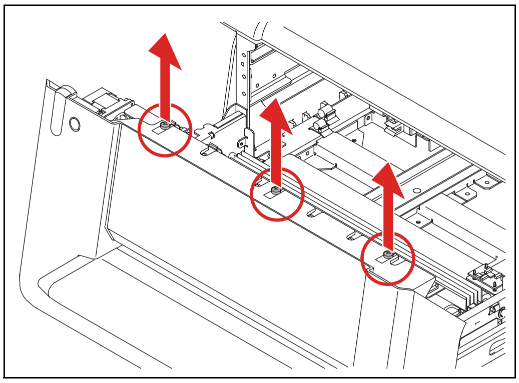


Figure 133

(6) Open 3 lower screws at front cover a few turns.

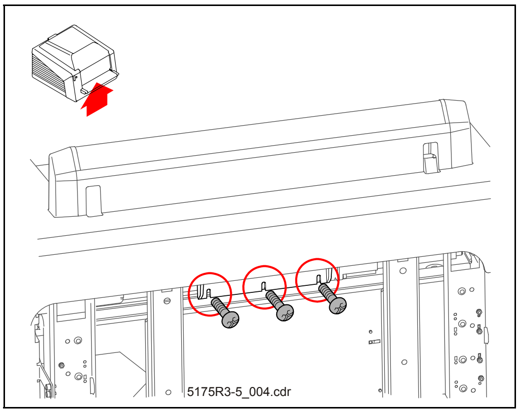


Figure 134

(7) Press two handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 135.

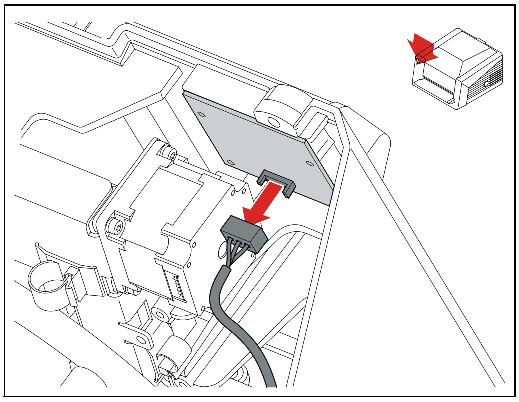


Figure 135

(9) Disconnect ground cable at left hand side.

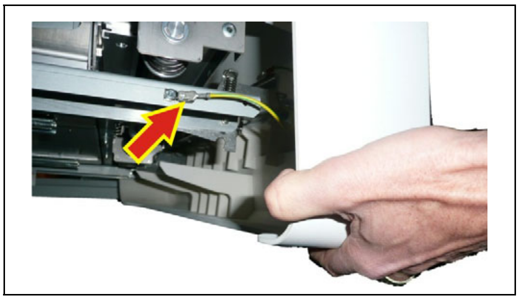


Figure 136

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

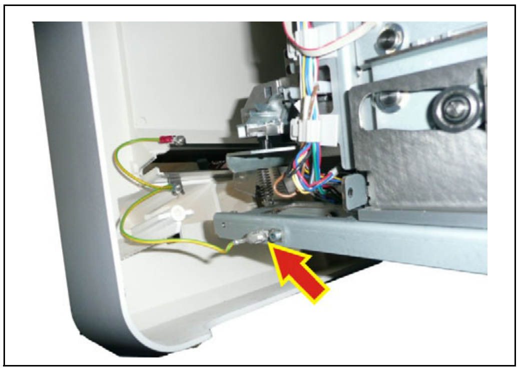


Figure 137

(16) Remove cable at plug P25 of IP handling board.

(17) Open cable holders.

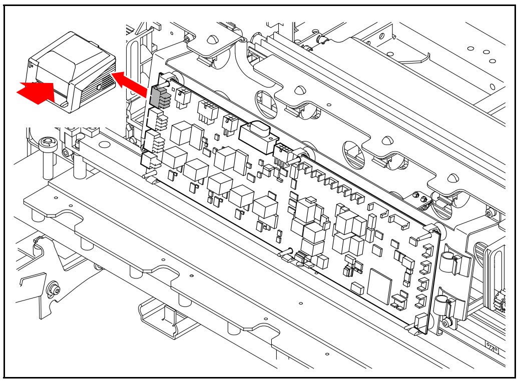


Figure 138

(12) Remove 3 screws of stepper motor roller.

(13) Remove motor.

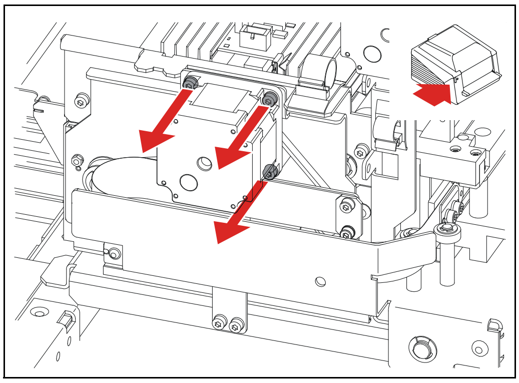


Figure 139

ASSEMBLY:

(1) Mount in reverse order. Observe IMPORTANT note below.

IMPORTANT:

Mount the motor with the motor cable outlet as shown in the figure enclosed:

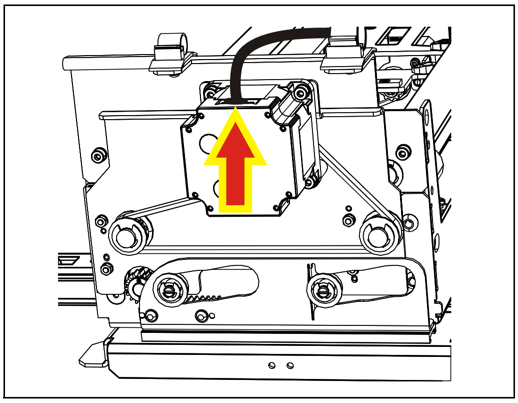


Figure 140

Verification

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

2.19 Replacing the Roller Clamping Stepper Motor (M6)

REQUIRED SPARE PART*:
CM+9 5175 8680 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

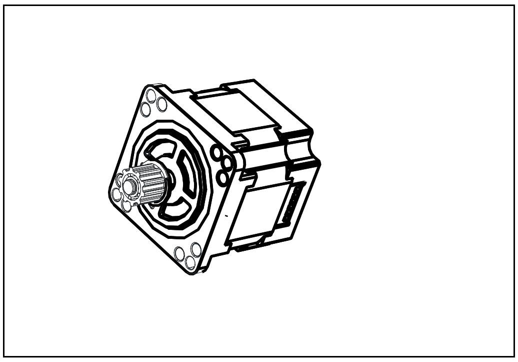
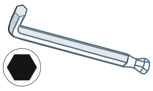


Figure 141

REQUIRED TOOLS:



3 mm,
with ball-shaped head

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

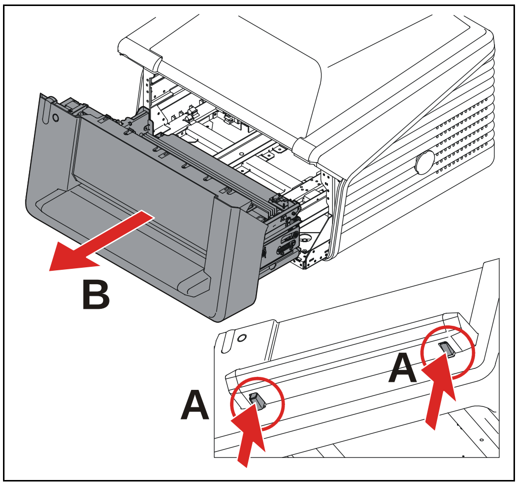


Figure 142

(5) Remove 3 upper screws.

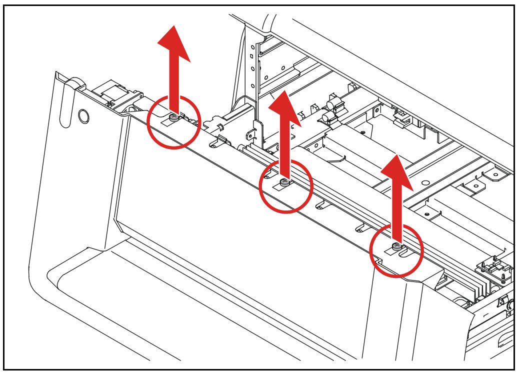


Figure 143

(6) Open 3 lower screws at front cover a few turns.

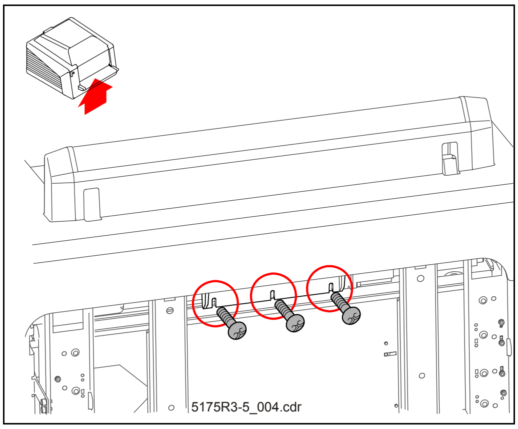


Figure 144

(7) Press two handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 145.

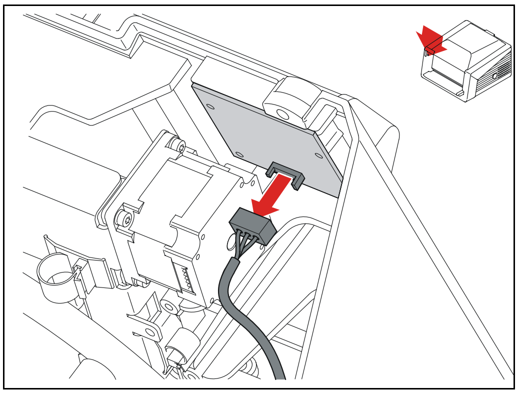


Figure 145

(9) Disconnect ground cable at left hand side.

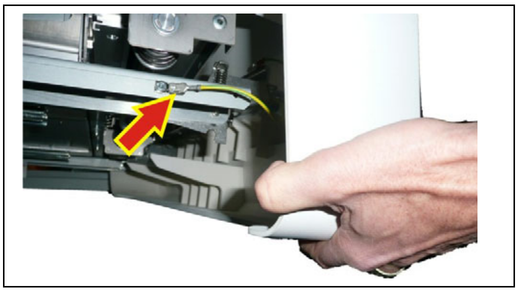


Figure 146

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

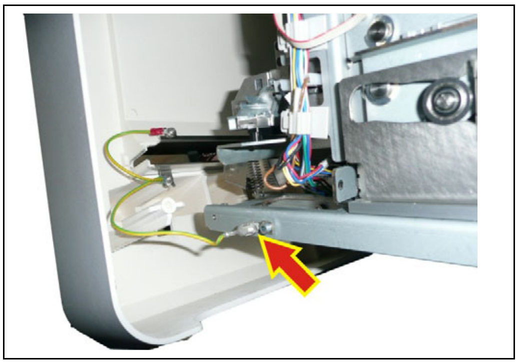


Figure 147

(12) Take out cleaning brush holder.

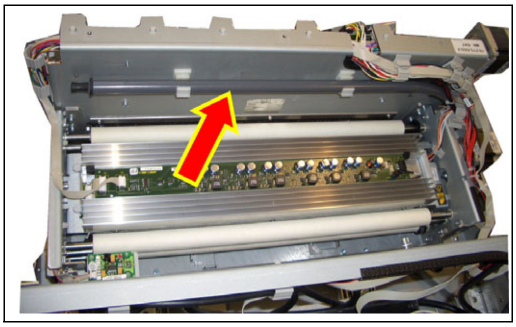


Figure 148

(13) Disconnect two cables at erasure unit.

(14) Remove screw at erasure unit.

(15) Take out erasure unit.

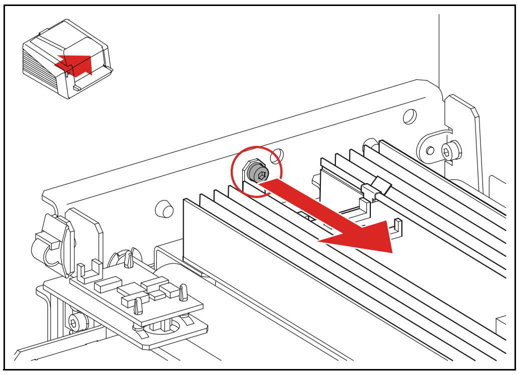


Figure 149

CAUTION:

IP jams possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(16) Slide IP guide plate to the left and lift it out.

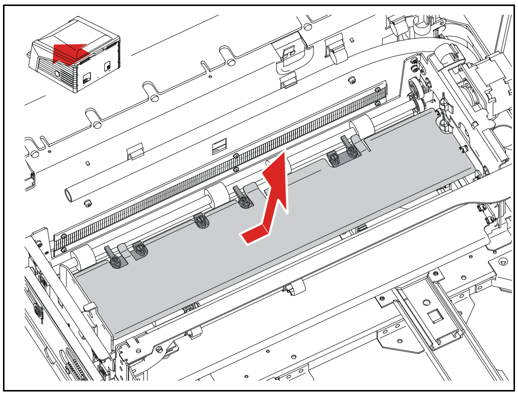


Figure 150

(17) Remove cable at plug P29 of IP handling board.

(18) Open cable holders.

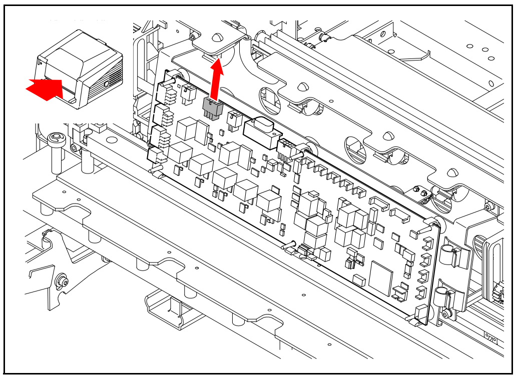


Figure 151

(19) Remove 4 screws of stepper motor roller clamping (only 3 screws are shown in Figure 152).

(20) Remove motor.

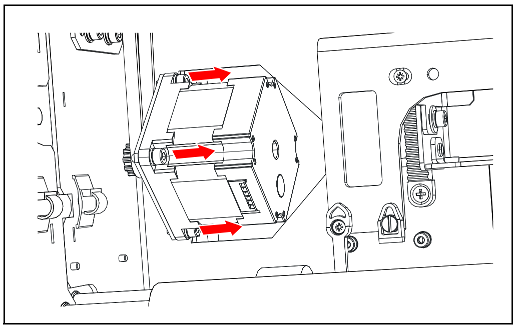


Figure 152

ASSEMBLY:

(1) Mount in reverse order. Observe IMPORTANT note below:

IMPORTANT:

Mount the motor with the motor cable outlet as shown in the figure enclosed (see arrow):

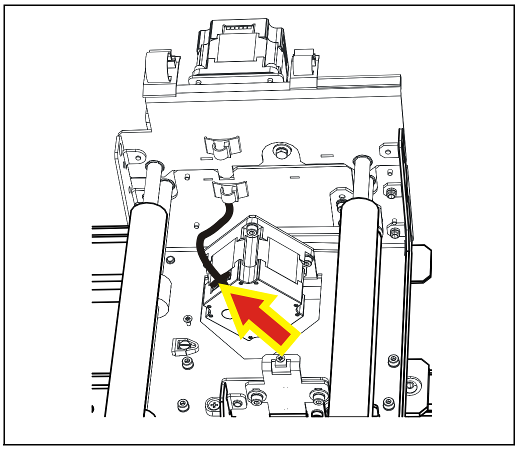


Figure 153

CALIBRATION:

(1) Perform a stall calibration for the roller clamping stepper motor.
Refer to chapter 3.6, Adjustments.

Verification

(1) Insert cassette with unexposed IP in the digitizer.

(2) At the workstation select examination type “System diagnosis – Flatfield”.

(3) Select “ID” to identify the image: Scanning starts.

(4) Confirm that the image arrives at the workstation.

(5) Reject the image.

2.20 Replacing the Roller IP Sensor

REQUIRED SPARE PART*:
CM+9 9499 6950 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

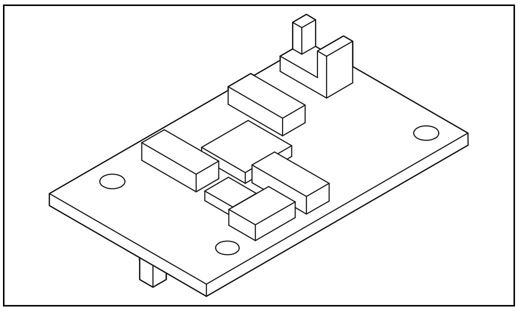


Figure 154

REQUIRED TOOLS:
None.

REQUIRED TIME:
15 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

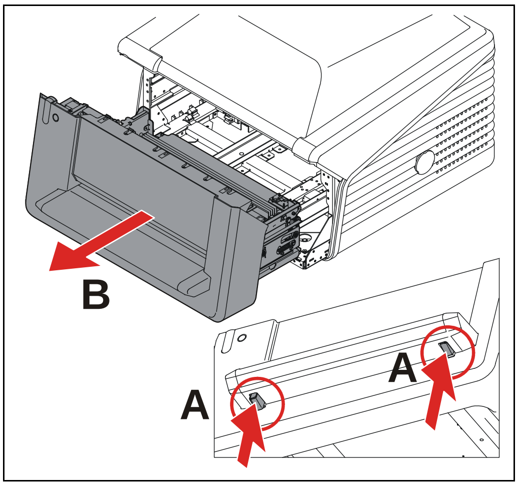


Figure 155

(5) Disconnect the cable.

(6) Remove the roller IP sensor.

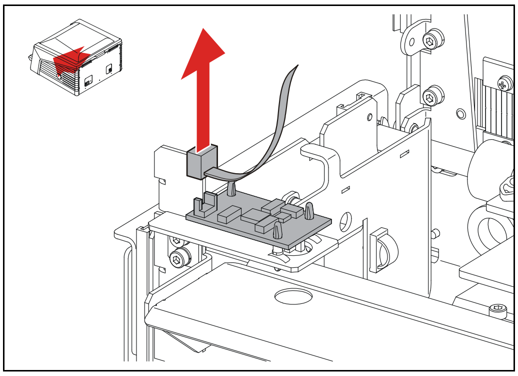


Figure 156

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green
(takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The roller IP sensor is replaced.

2.21 Replacing the Toothed Belt Stepper Motor Roller Clamping

REQUIRED SPARE PART*:
CM+9 5175 9050 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

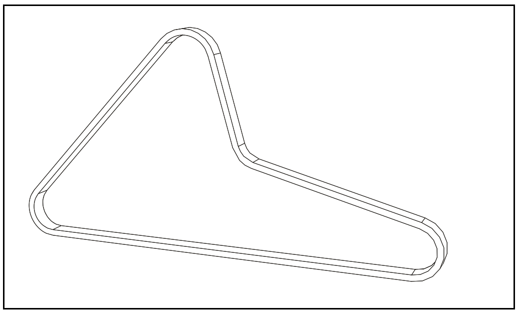


Figure 157

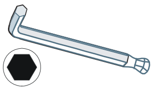
IMPORTANT:

Spare part CM+9 5175 9050 0 contains all replaceable belts for the digitizer.

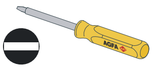
It is not required to replace all toothed belts together.

Only replace the defective toothed belt.

REQUIRED TOOLS:



3 mm,
with ball-shaped head



Small size

REQUIRED TIME:
90 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

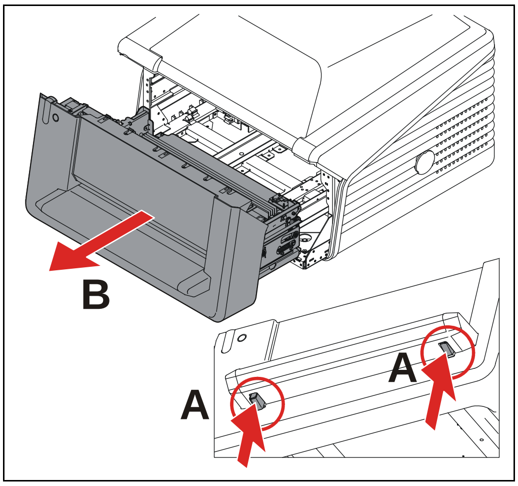


Figure 158

(5) Remove 3 upper screws.

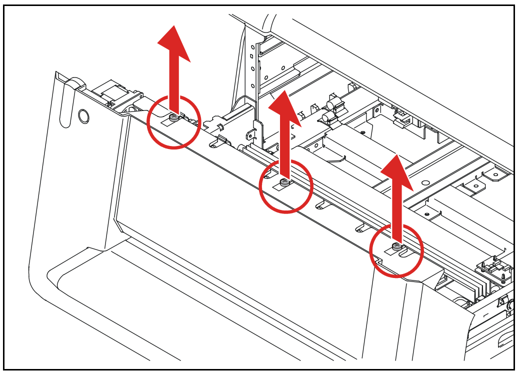


Figure 159

(6) Open 3 lower screws at front cover a few turns.

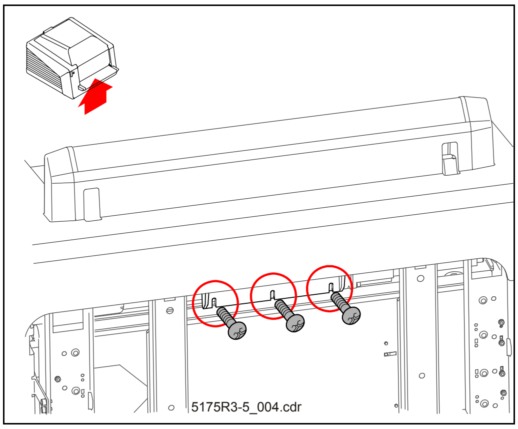


Figure 160

(7) Press two handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 161.

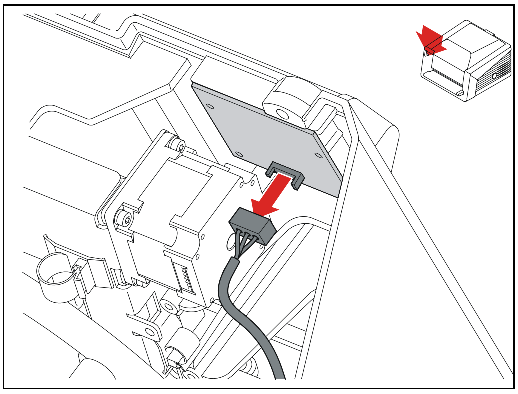


Figure 161

(9) Disconnect ground cable at left hand side.

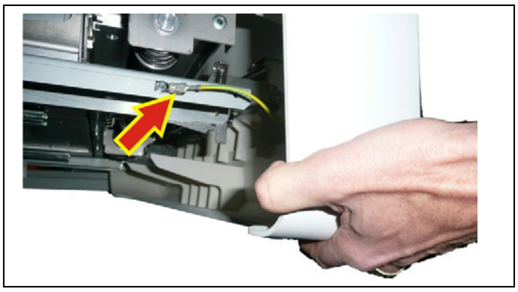


Figure 162

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

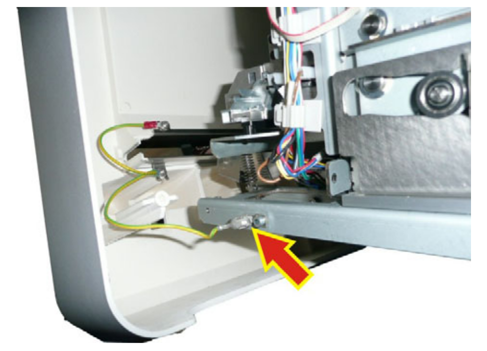


Figure 163

(12) Take out cleaning brush holder.

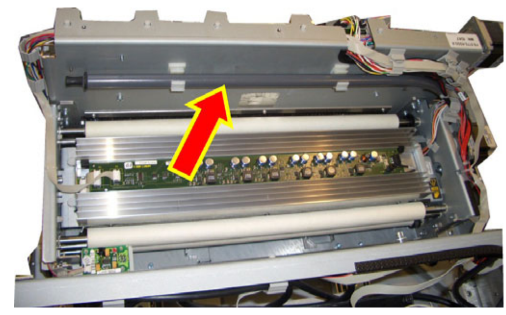


Figure 164

(13) Disconnect two cables at erasure unit.

(14) Remove screw at erasure unit.

(15) Take out erasure unit.

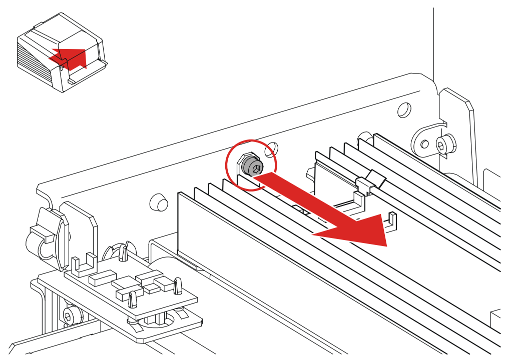


Figure 165

CAUTION:

IP jams possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(16) Slide IP guide plate to the left and lift it out.

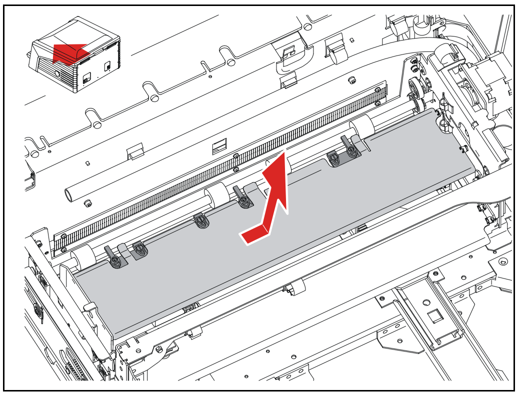


Figure 166

(17) Disconnect cable at roller IP sensor.

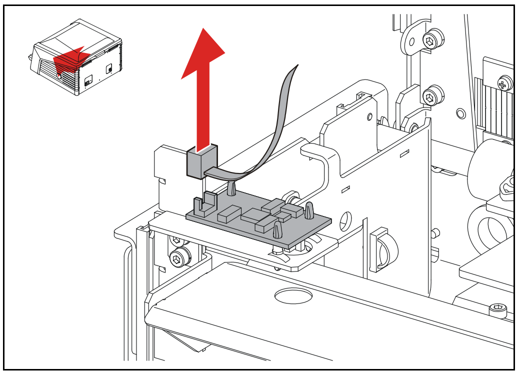


Figure 167

(18) Open three cable holders at right hand side.

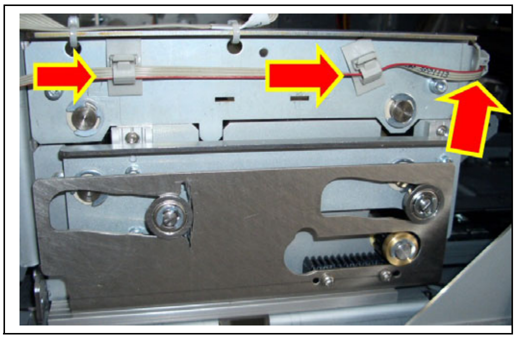


Figure 168

(19) Open cable holders at left hand side.

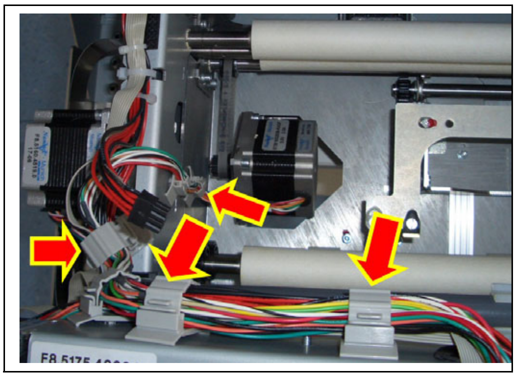


Figure 169

(20) Cut two cable ties at upper part transport unit right hand side.

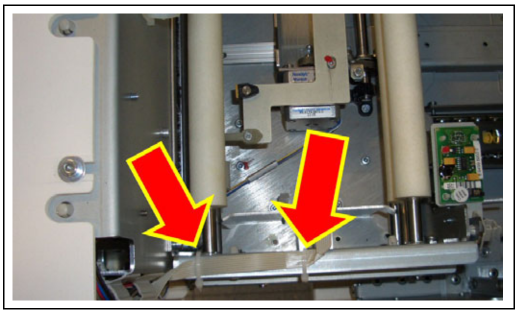


Figure 170

(21) Cut one cable tie at upper part transport unit cable harness left hand side.

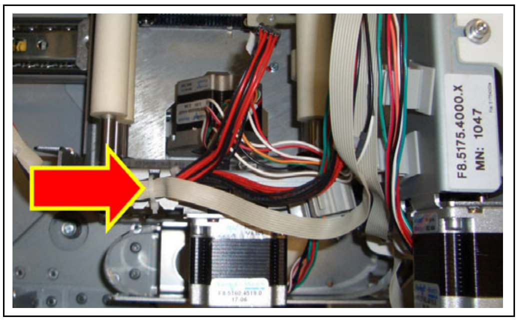


Figure 171

(22) Unplug P4, P17, P25 and P29 at IP handling board.

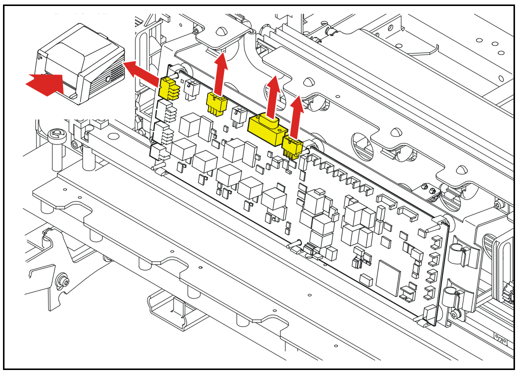


Figure 172

(23) Remove 2 screws of upper part transport unit right hand side.

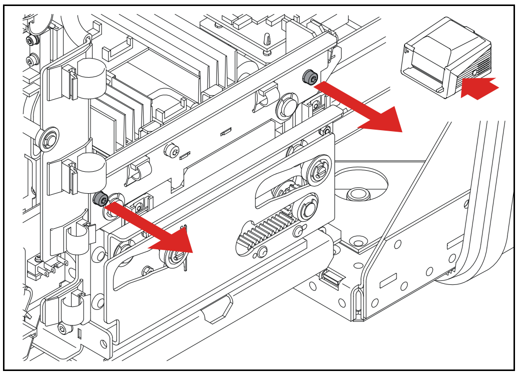


Figure 173

(24) Remove 2 screws of upper part transport unit left hand side.

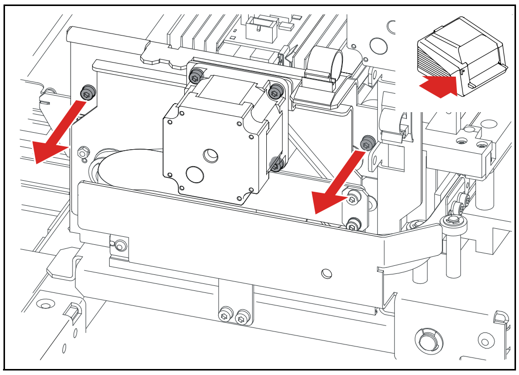


Figure 174

(25) Take off upper part transport unit.

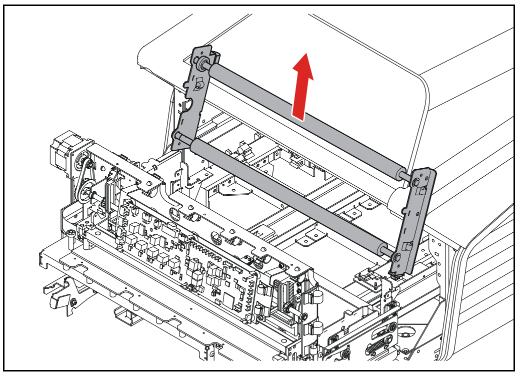


Figure 175

(26) With a screwdriver remove two ball bearings at transport unit left hand side.

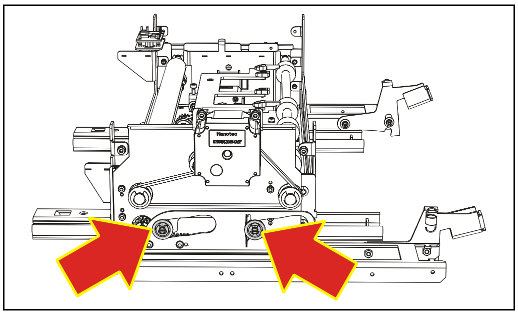


Figure 176

(27) Remove two ball bearings at transport unit right hand side.

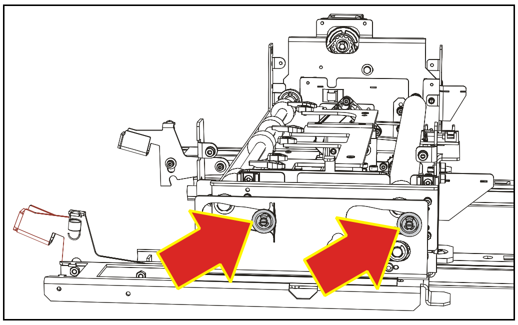


Figure 177

(28) Take off the complete lower transport unit.

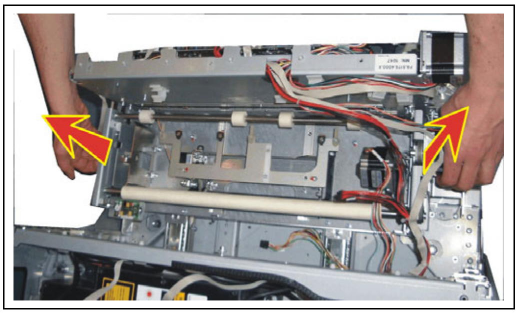


Figure 178

(29) Open screws at axle gear plate.

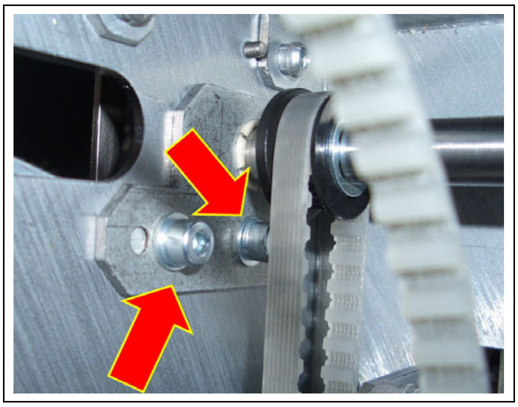


Figure 179

(30) Remove c-clip at axle.

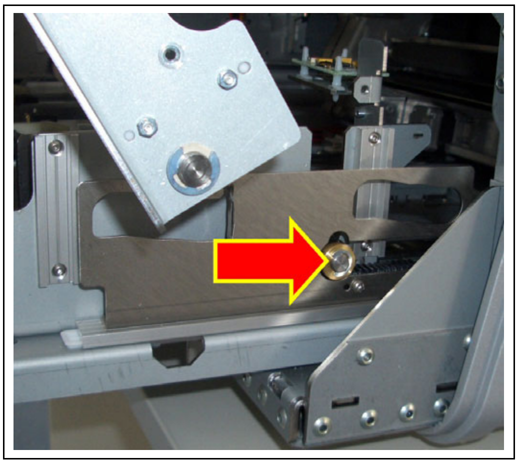


Figure 180

(31) Slide out axle.

(32) Replace belt.

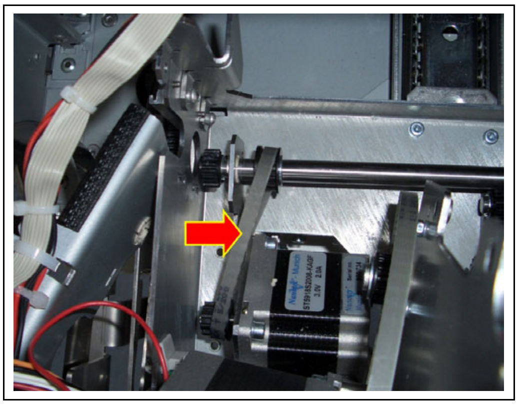


Figure 181

ASSEMBLY:

(1) Mount in reverse order.

CALIBRATION:

(1) Perform a stall calibration for the roller clamping motor.
Refer to chapter 3.6, Adjustments.

Verification:

(1) Insert cassette with unexposed IP in the digitizer.

(2) At the workstation select examination type “System diagnosis – Flatfield”.

(3) Select “ID” to identify the image: Scanning starts.

(4) Confirm that the image arrives at the workstation.

(5) Reject the image.

(6) Repeat steps (1) to (5) with each cassette format the customer is using.

Result: The toothed belt Stepper Motor Roller Clamping is replaced.

2.22 Replacing the Toothed Belt Stepper Motor Drawer

REQUIRED SPARE PART*:
CM+9 5175 9050 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

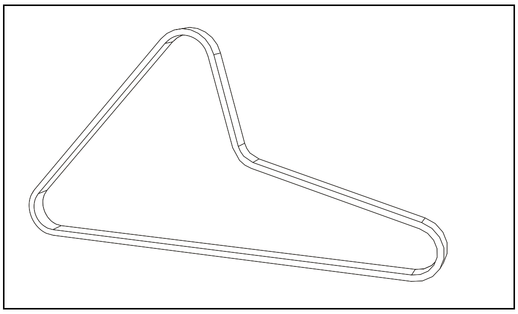


Figure 182

IMPORTANT:

Spare part CM+9 5175 9050 0 contains all belts for the digitizer.

It is not required to replace all toothed belts together.

Only replace the defective toothed belt.

REQUIRED TOOLS:

⬢	3 mm, with ball-shaped head	⊖	Small size

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

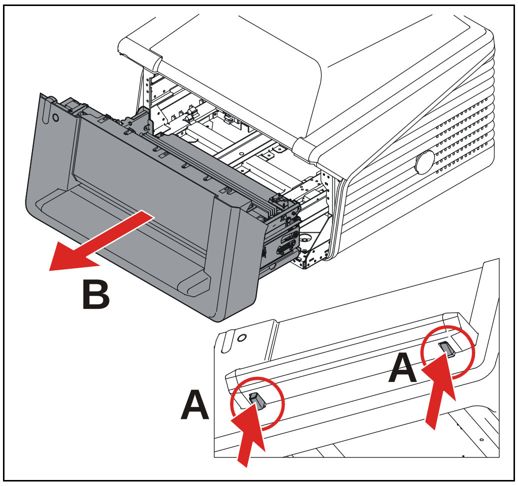


Figure 183

(5) Remove 3 upper screws.

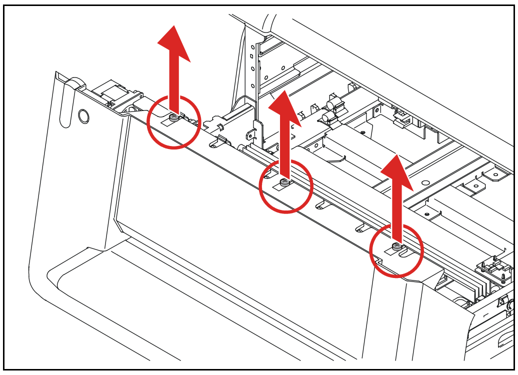


Figure 184

(6) Open 3 lower screws at front cover a few turns.

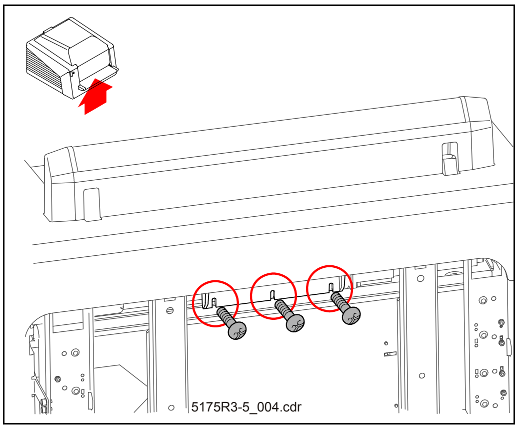


Figure 185

(7) Press both handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 186.

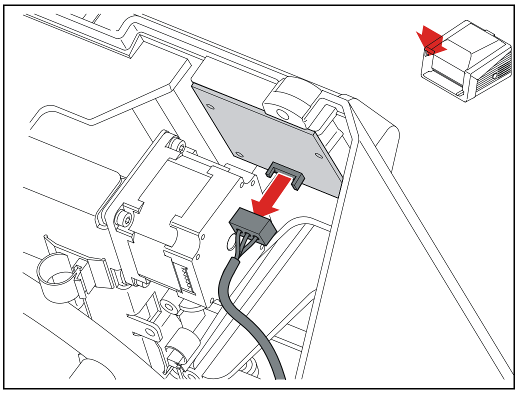


Figure 186

(9) Disconnect ground cable at left hand side.

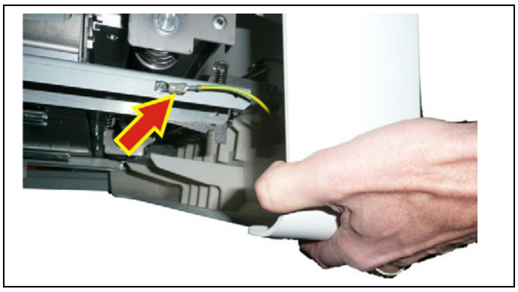


Figure 187

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

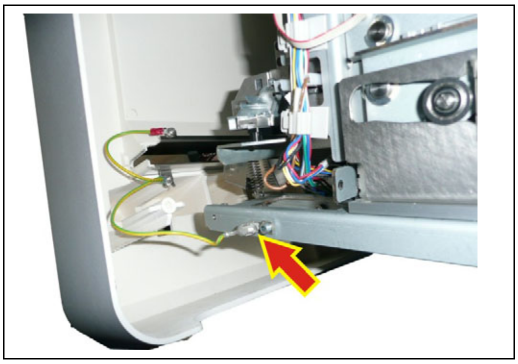


Figure 188

(12) Remove screw at erasure unit.

(13) Disconnect two cables at erasure unit.

(14) Take out erasure unit.

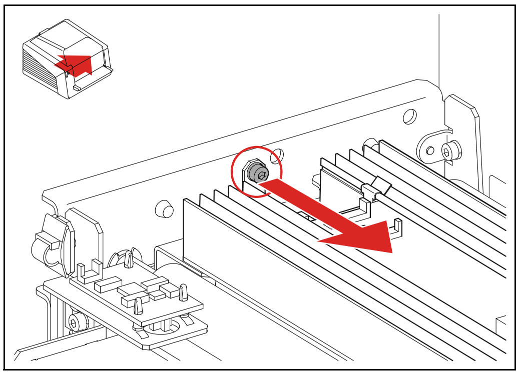


Figure 189

CAUTION:

IP jams possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(15) Remove IP guide plate.

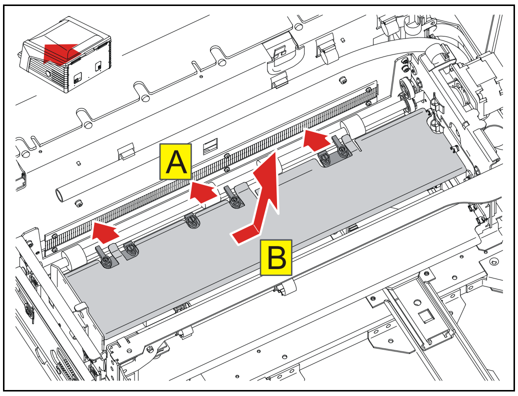


Figure 190

(16) Remove the toothed belt.

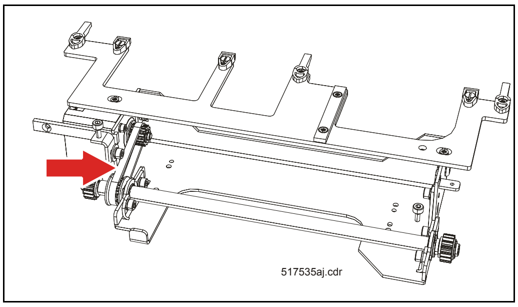


Figure 191

ASSEMBLY:

(1) Mount in reverse order.

CALIBRATION:

(1) Perform a stall calibration for the drawer motor.
Refer to chapter 3.6, Adjustments.

Verification:

(1) Insert cassette with unexposed IP in the digitizer.
(2) At the workstation select examination type “System diagnosis – Flatfield”.
(3) Select “ID” to identify the image: Scanning starts.
(4) Confirm that the image arrives at the workstation.
(5) Reject the image.

Result: The Toothed Belt Stepper Motor Drawer is replaced.

2.23 Replacing the Toothed Belt Stepper Motor Roller

REQUIRED SPARE PART*:
CM+9 5175 9050 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

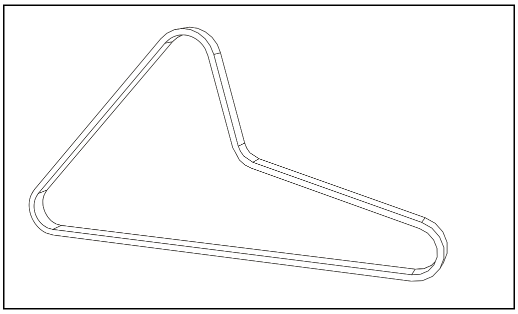


Figure 192

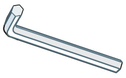
IMPORTANT:

Spare part CM+9 5175 9050 0 contains all belts for the digitizer.

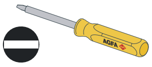
It is not required to replace all toothed belts together.

Only replace the defective toothed belt.

REQUIRED TOOLS:



3 mm



Small size

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

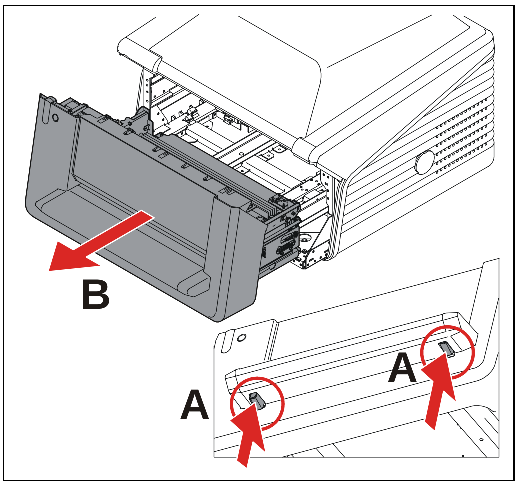


Figure 193

(5) Remove 3 upper screws.

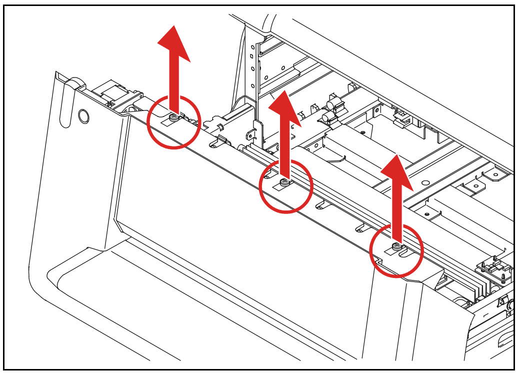


Figure 194

(6) Open 3 lower screws at front cover a few turns.

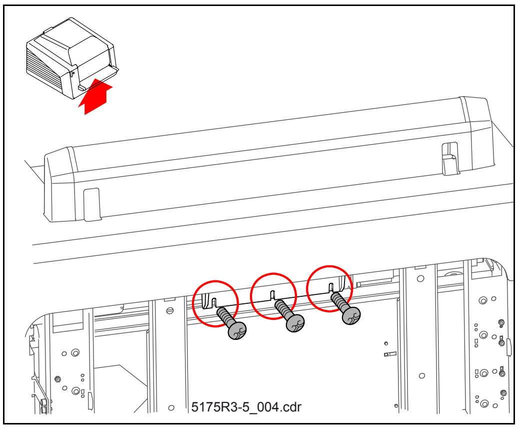


Figure 195

(7) Press two handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 196.

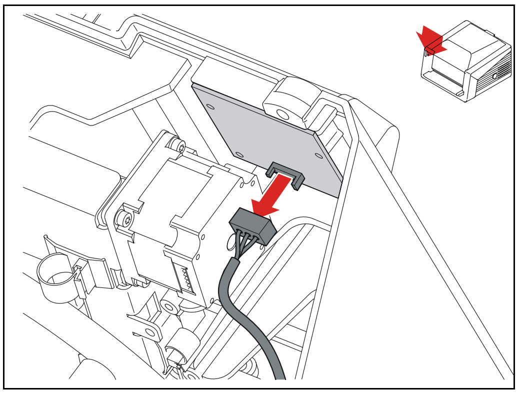


Figure 196

(9) Disconnect ground cable at left hand side.

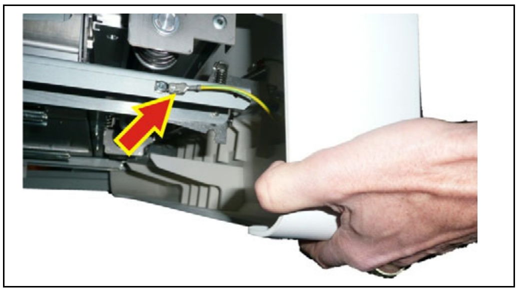


Figure 197

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

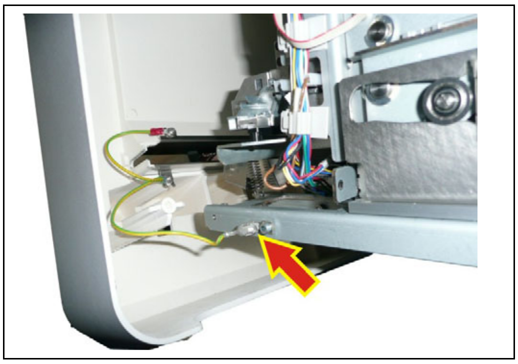


Figure 198

(12) Remove 3 screws of stepper motor roller.

(13) Remove motor.

(14) Remove belt.

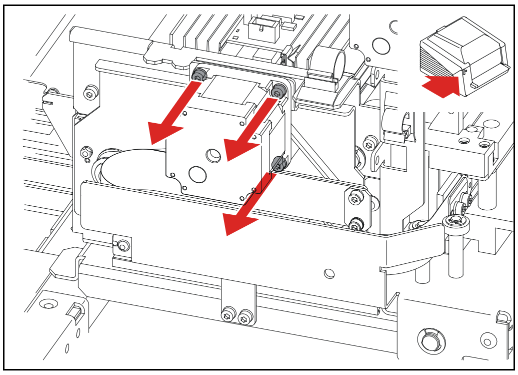


Figure 199

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green
(takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The Toothed Belt Stepper Motor Roller is replaced.

2.24 Replacing the Toothed Belt Stepper Motor Opener

REQUIRED SPARE PART*:
CM+9 5175 9050 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

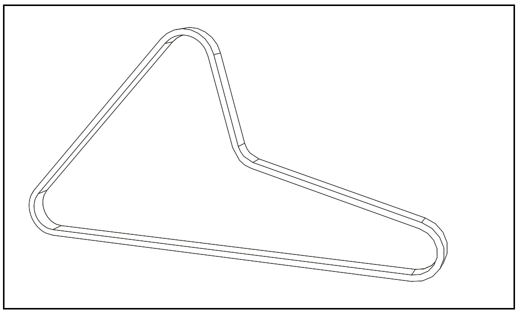


Figure 200

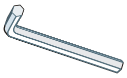
IMPORTANT:

Spare part CM+9 5175 9050 0 contains all belts for the digitizer.

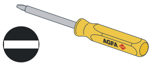
It is not required to replace all toothed belts together.

Only replace the defective toothed belt.

REQUIRED TOOLS:



3 mm



Small size

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

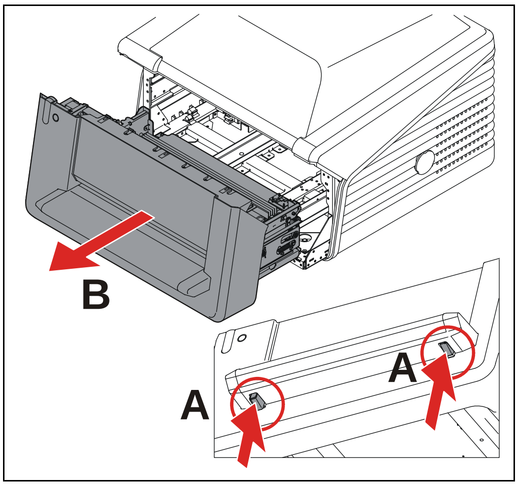


Figure 201

(5) Remove 3 upper screws.

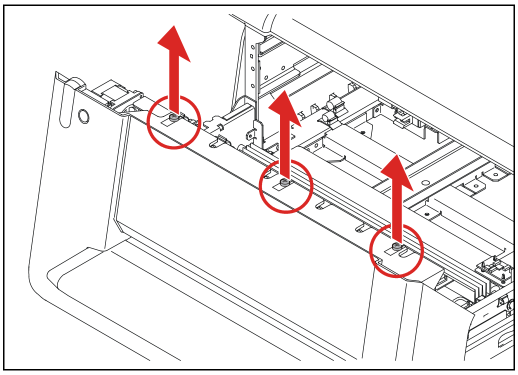


Figure 202

(6) Open 3 lower screws at front cover a few turns.

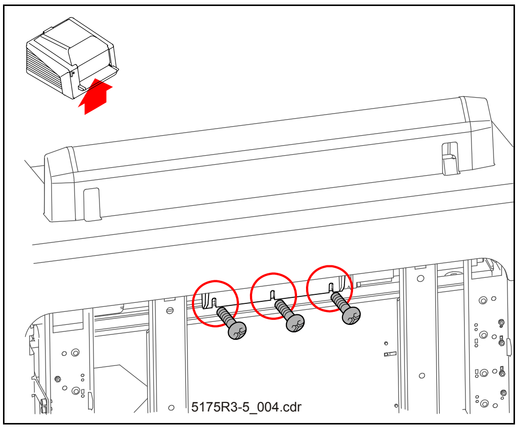


Figure 203

(7) Press two handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 204.

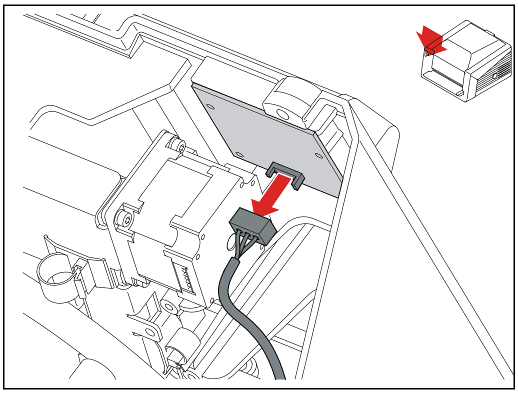


Figure 204

(9) Disconnect ground cable at left hand side.

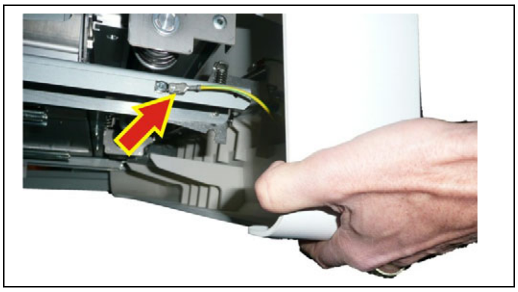


Figure 205

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

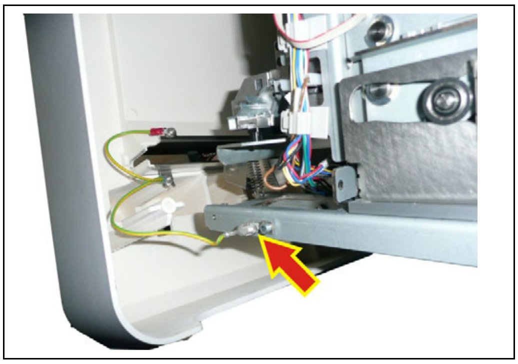


Figure 206

(12) Remove toothed belt.

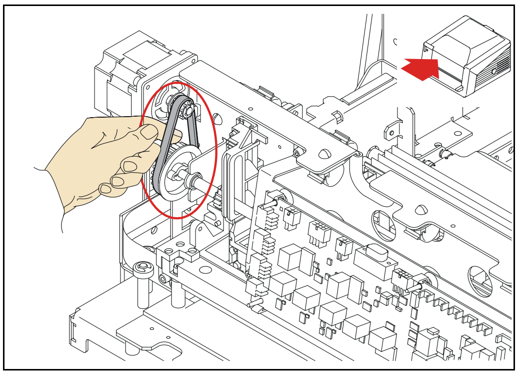


Figure 207

ASSEMBLY:

(1) Mount in reverse order.

CALIBRATION:

(1) Perform a stall calibration for the opener motor.
Refer to chapter 3.6, Adjustments.

Verification:

(1) Insert cassette with unexposed IP in the digitizer.

(2) At the workstation select examination type “System diagnosis – Flatfield”.

(3) Select “ID” to identify the image: Scanning starts.

(4) Confirm that the image arrives at the workstation.

(5) Reject the image.

Result: The Toothed Belt Stepper Motor Opener is replaced.

2.25 Replacing the User Interface Board

REQUIRED SPARE PART*:
CM+9 5175 1580 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

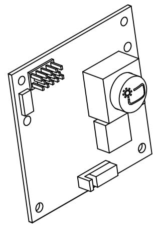
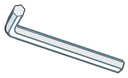
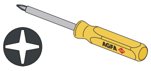


Figure 208

REQUIRED TOOLS:



3 mm



Medium size

REQUIRED TIME:
5 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

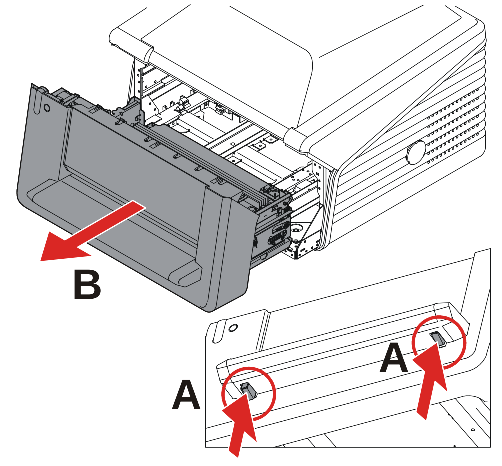


Figure 209

(5) Remove 3 upper screws.

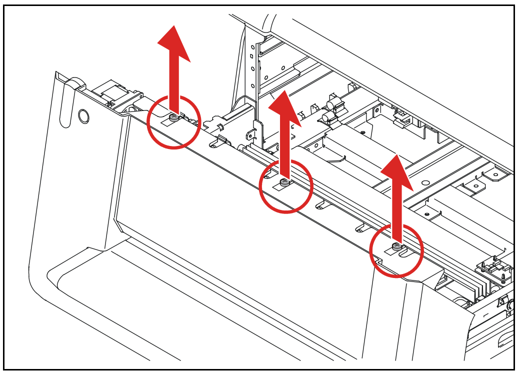


Figure 210

(6) Open 3 lower screws at front cover a few turns.

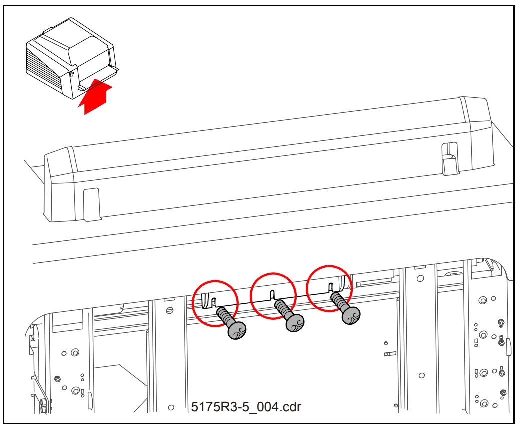


Figure 211

(7) Press two handles and pull out front cover approx. 5 cm.

(8) Disconnect cable at user interface board. See Figure 212.

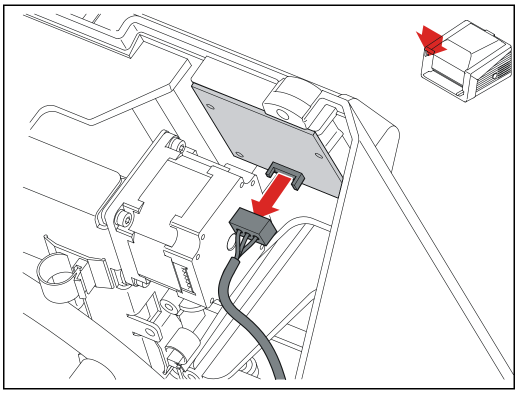


Figure 212

(9) Disconnect ground cable at left hand side.

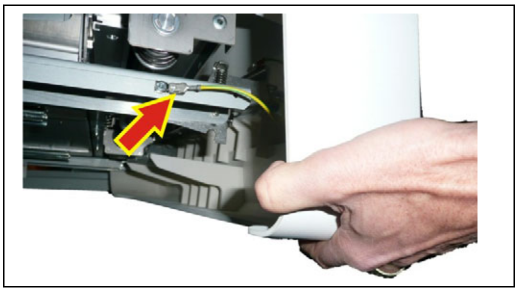


Figure 213

(10) Disconnect ground cable at right hand side.

(11) Remove front cover.

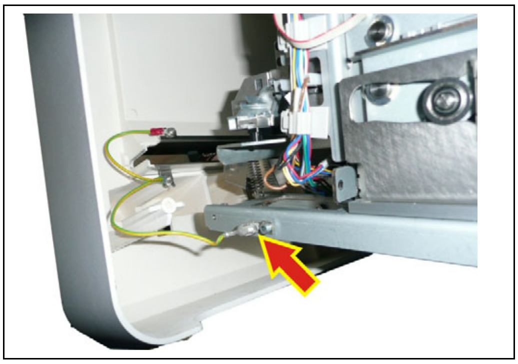


Figure 214

(12) Remove four screws.

(13) Remove the user interface board.

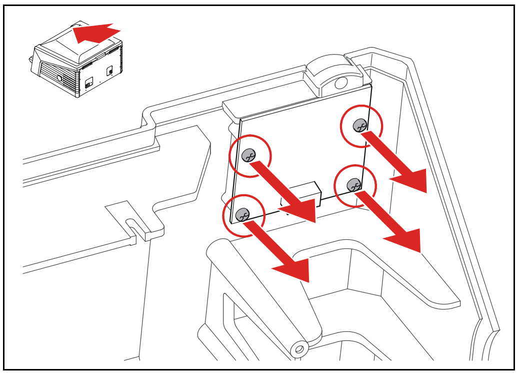


Figure 215

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The user interface board is replaced.

3 Replacements at Scan Module

3.1 Replacing the Calibration Board

The replacement instructions for the Calibration Board, spare part number* CM+9 5175 2470 2, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

3.2 Replacing the Optic Module

The replacement instructions for the Optic Module, spare part number* CM+9 5175 2750 0, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

3.3 Replacing the PMI Power Distribution Board

REQUIRED SPARE PART:
CM+9 5170 4960 0*

*0 in the spare part number indicates the spare part revision at release of this document.
When ordering, a different revision of the spare part may be delivered (e.g. 1).

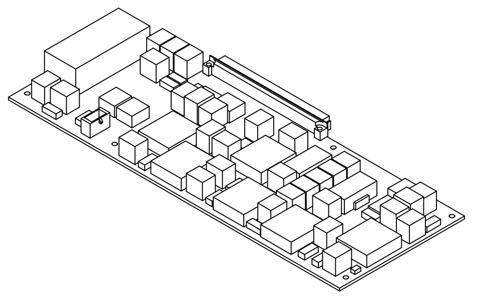
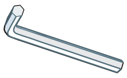
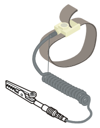


Figure 216

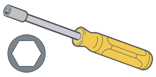
REQUIRED TOOLS:



3 mm



Antistatic wrist strap



5,5 mm (magnetic)

REQUIRED TIME:

30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

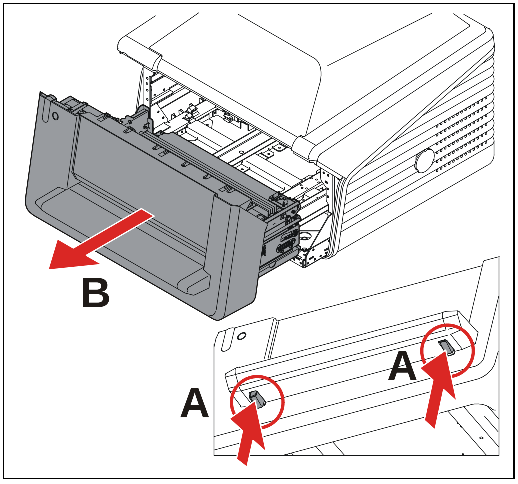


Figure 217

(5) Remove 3 screws of the top cover.

(6) Remove top cover.

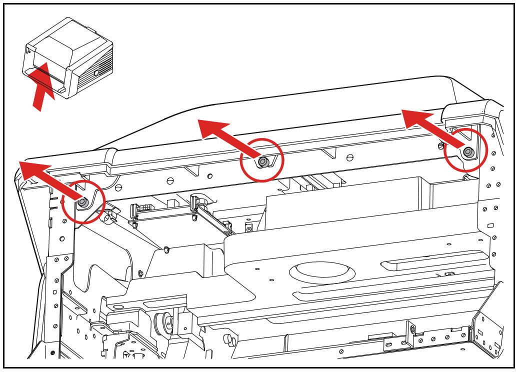


Figure 218

(7) Disconnect all cables at the PMI Power distribution board.

(8) Open the 6 mounting screws.

(9) Remove the PMI Power distribution board.

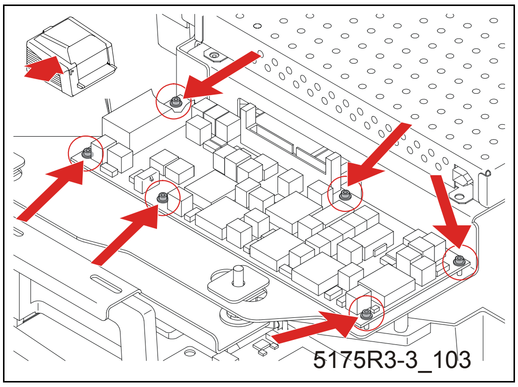


Figure 219

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The PMI Power Distribution Board is replaced.

3.4 Replacing the PMI Board

The replacement instructions for the PMI Board, spare part number* CM+9 5175 2180 0, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

3.5 Replacing the PMT with Light Collector

The replacement instructions for the PMT with Light Collector, spare part number* CM+9 5175 9010 3, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

3.6 Replacing the Scan Rollers

REQUIRED SPARE PART*:
CM+9 5175 2650 1

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

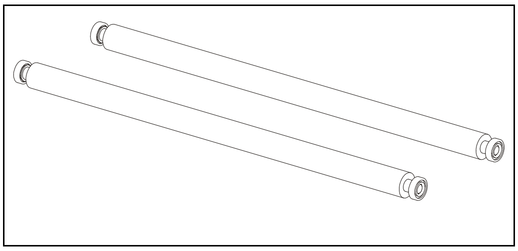
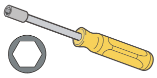


Figure 220

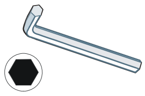
IMPORTANT:

Spare part CM+9 5175 2650 1 contains both upper scan rollers. It is recommended to replace both scan rollers together.

REQUIRED TOOLS:



5 mm



3 mm

REQUIRED TIME:
45 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

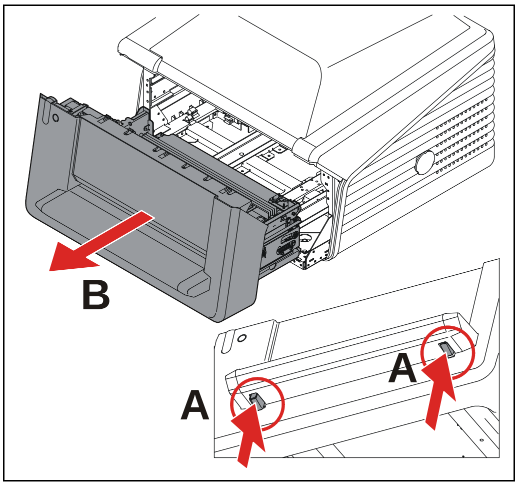


Figure 221

(5) Remove 3 screws of the top cover.

(6) Remove top cover.

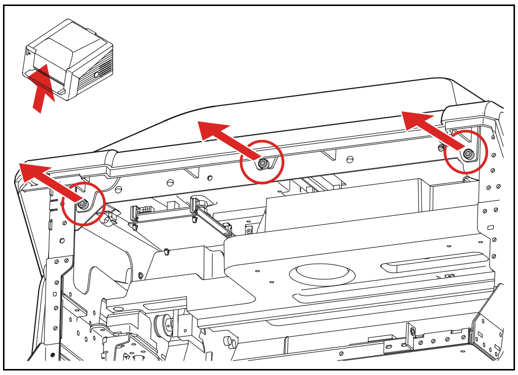


Figure 222

(7) Remove 3 screws of the left cover.

(8) Remove left cover.

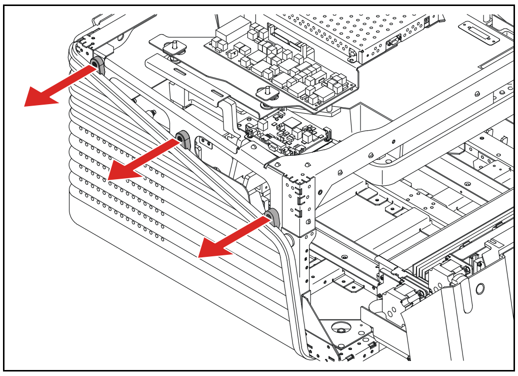


Figure 223

(9) Remove 3 screws of the right cover.

(10) Remove right cover.

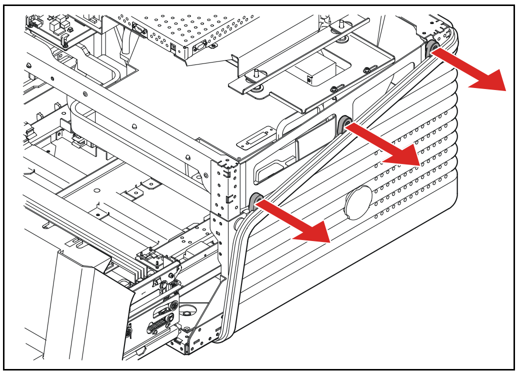


Figure 224

(11) Remove screws of the rear cover.

(12) Remove rear cover.

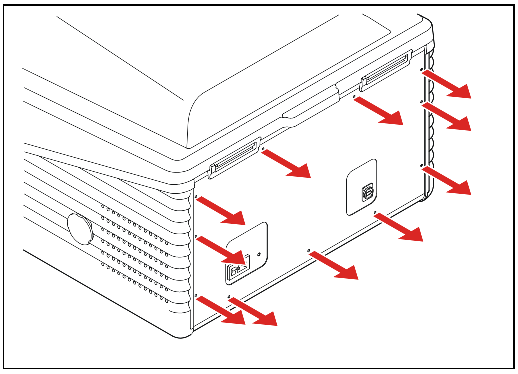


Figure 225

(13) Remove safety bracket at front scan roller.

(14) Remove front scan roller.

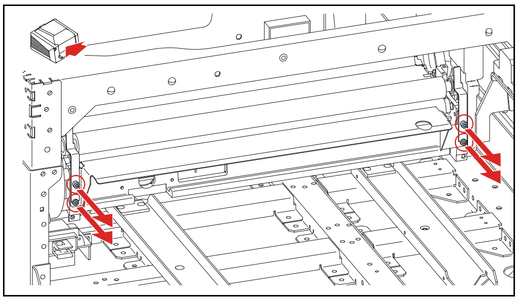


Figure 226

(15) Remove safety bracket at rear scan roller left hand side.

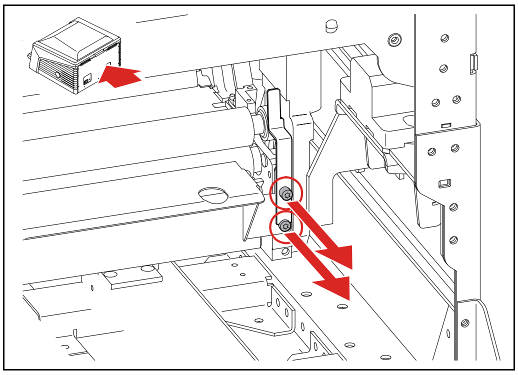


Figure 227

(16) Remove safety bracket at rear scan roller right hand side.

(17) Remove rear scan roller.

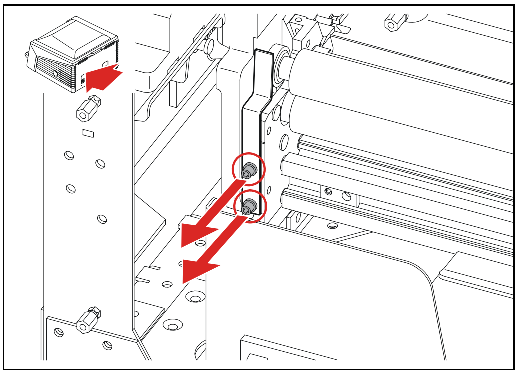


Figure 228

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The scan rollers are replaced.

3.7 Replacing the Slow Scan Board

The replacement instructions for the Slow Scan Board, spare part number* CM+9 5175 2120 0, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

3.8 Replacing the Slow Scan Unit

The replacement instructions for the Slow Scan Unit, spare part number* CM+9 5175 2400 0, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

3.9 Replacing the ESD Brush

The replacement instructions for the ESD Brush, spare part number* CM+9 5175 9080 1, are enclosed to the spare part.

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

4 Replacements at the Mounting Rack

4.1 Replacing the Cassette Unit open Safety Switch

REQUIRED SPARE PART*:
CM+9 0426 6304 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

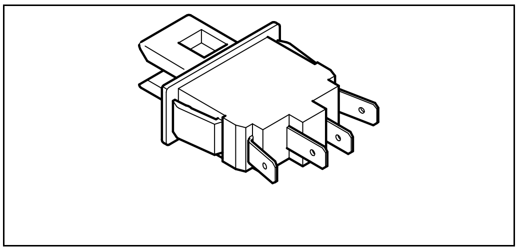
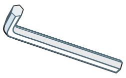
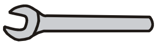


Figure 229

REQUIRED TOOLS:



3 mm



5 mm

REQUIRED TIME:
60 min.

DOCUMENT CONTROL NOTE:
The controlled version of this document resides on MedNet. Any printed copy of this document is uncontrolled.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

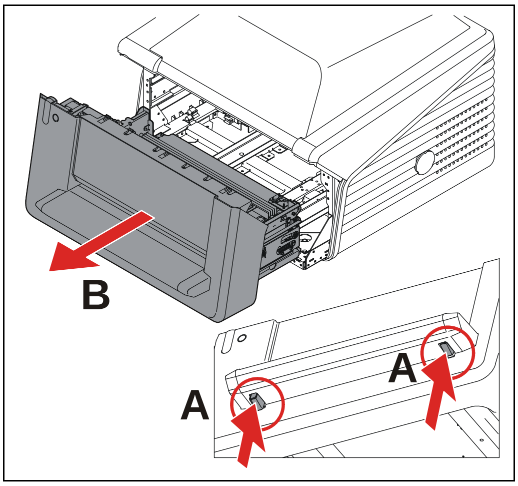


Figure 230

(5) Remove 3 screws of the top cover.

(6) Remove top cover.

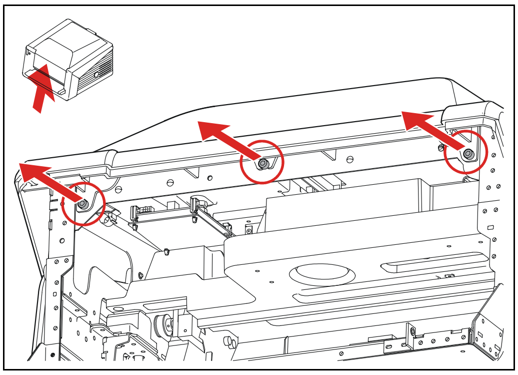


Figure 231

(7) Remove 3 screws of the left cover.

(8) Remove left cover.

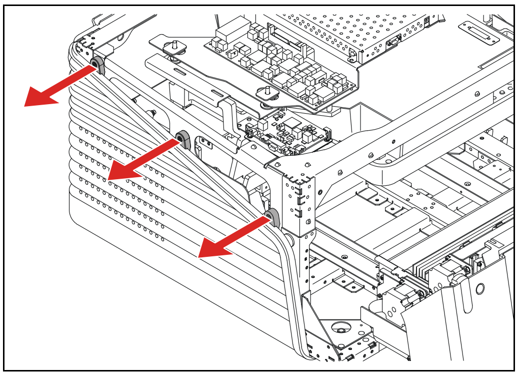


Figure 232

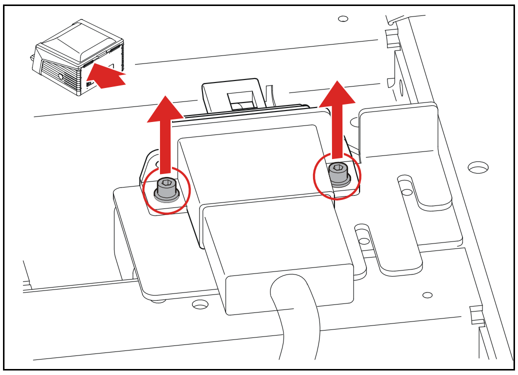


Figure 233

(9) Remove 2 screws at safety switch left and right hand side.

(10) Remove safety switch.

(11) Remove cables at safety switch.

ASSEMBLY:

(1) Mount in reverse order.

MECHANICAL ADJUSTMENT:

(1) Perform the cassette unit safety switch position adjustment.
Refer to section 3.6, adjustments.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The Cassette Unit open Safety Switch is replaced.

4.2 Replacing the Distributor Board

REQUIRED SPARE PART*:
CM+9 5175 1560 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

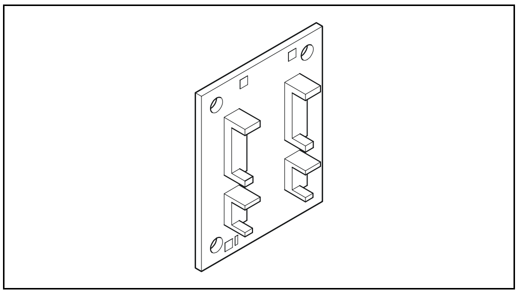
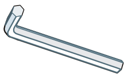


Figure 234

REQUIRED TOOLS:



3 mm

REQUIRED TIME:
30 min.

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

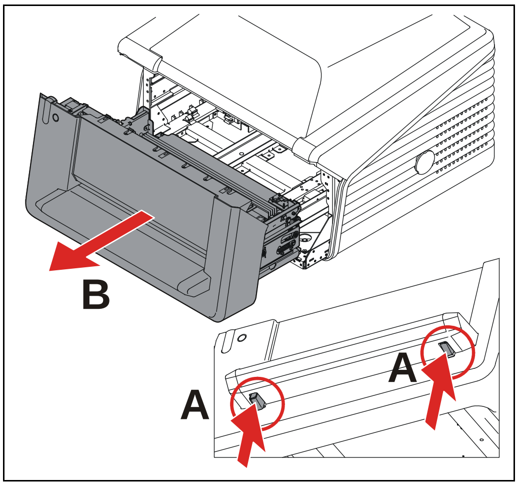


Figure 235

(5) Remove 3 screws of the top cover.

(6) Remove top cover.

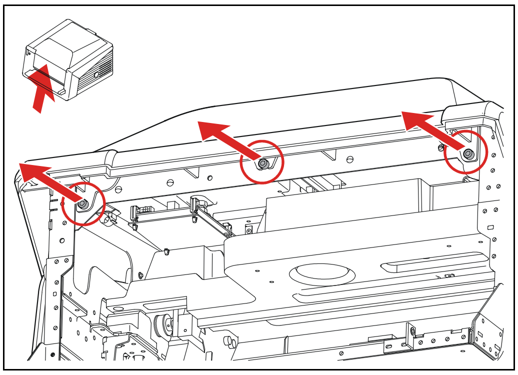


Figure 236

(7) Remove 3 screws of the left cover

(8) Remove left cover

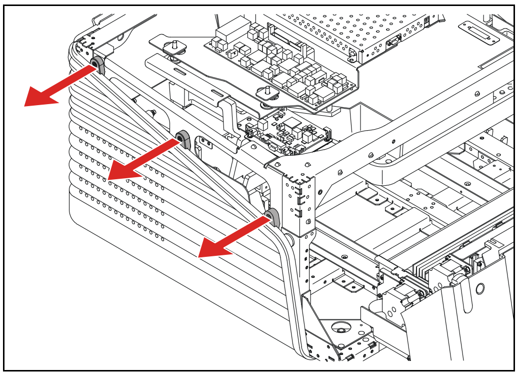


Figure 237

(9) Remove 3 screws of the right cover.

(10) Remove right cover.

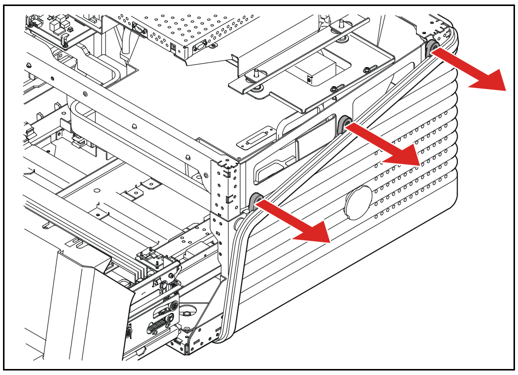


Figure 238

(11) Remove screws of the rear cover.

(12) Remove rear cover.

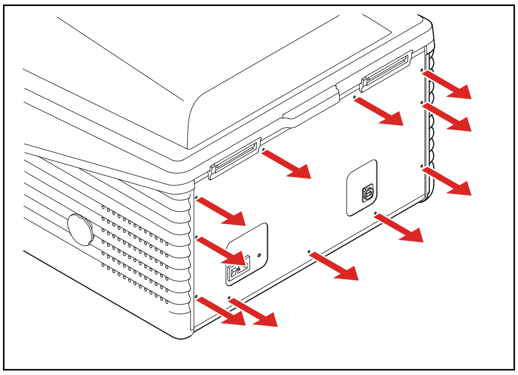


Figure 239

(13) Disconnect cables at Distributor board.

(14) Remove distributor board.

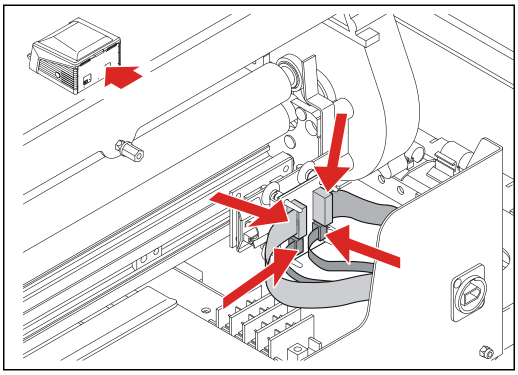


Figure 240

ASSEMBLY:

(1) Mount in reverse order.

Verification:

(1) Switch on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The Distributor Board is replaced.

4.3 Replacing the Power Supply

REQUIRED SPARE PART*:
CM+9 5175 1420 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

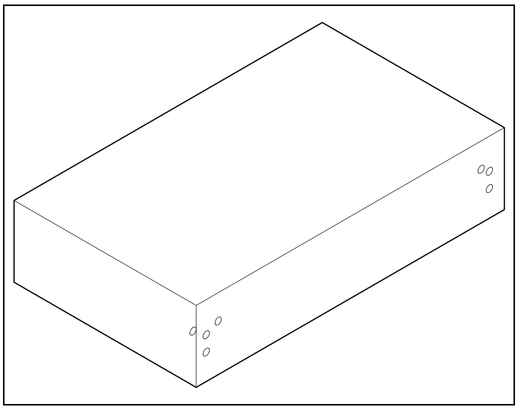
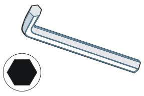
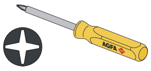


Figure 241

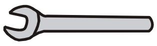
REQUIRED TOOLS:



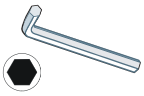
3 mm



Medium size



5 mm



2,5 mm

REQUIRED TIME:
60 min.

DANGER:

If the power cord is connected and the main switch is switched on the input side of the power supply is connected to high voltage. Risk of live.

Remove all cables in the rear of the digitizer before removal of the rear cover

DISASSEMBLY:

(1) Switch off the digitizer.

(2) Remove all cables in the rear.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

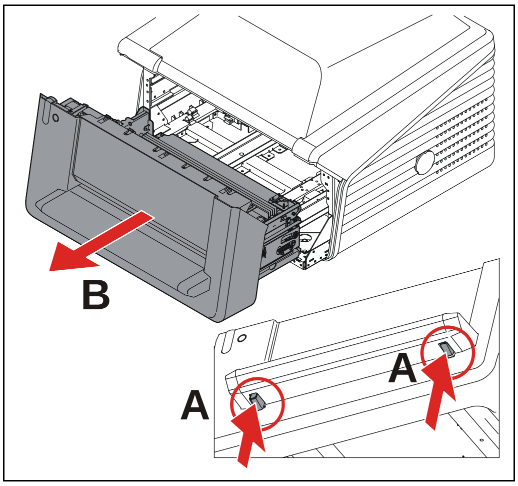


Figure 242

(5) Remove 3 screws of the top cover.

(6) Remove top cover.

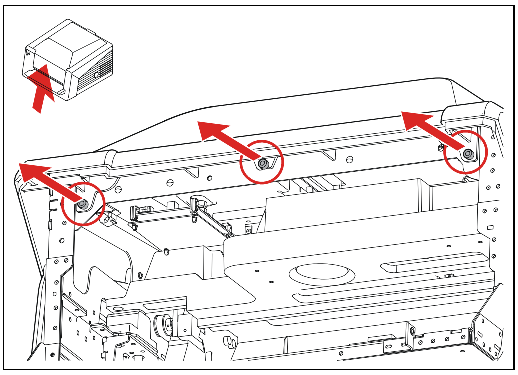


Figure 243

(7) Remove 3 screws of the left cover.

(8) Remove left cover.

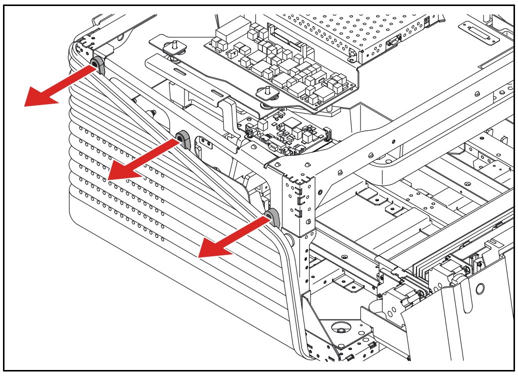


Figure 244

(9) Remove 3 screws of the right cover.

(10) Remove right cover.

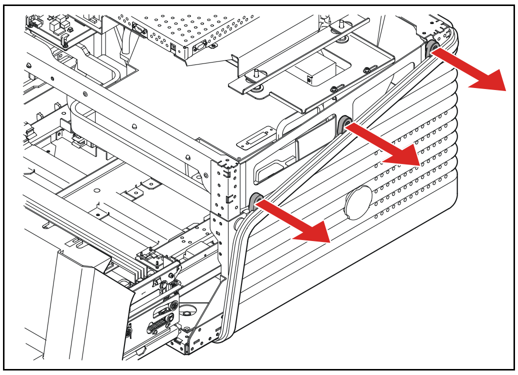


Figure 245

(11) Remove screws of the rear cover.

(12) Remove rear cover.

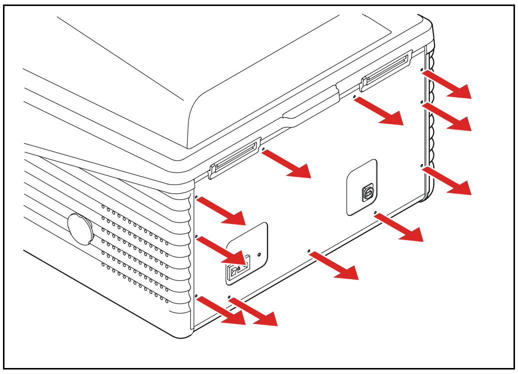


Figure 246

(13) Remove 2 rear screws.

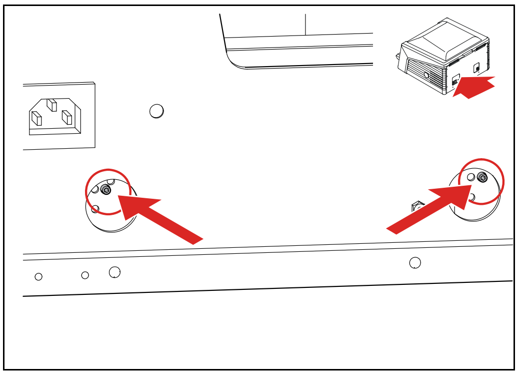


Figure 247

(14) Unscrew all connectors at output side of power supply.

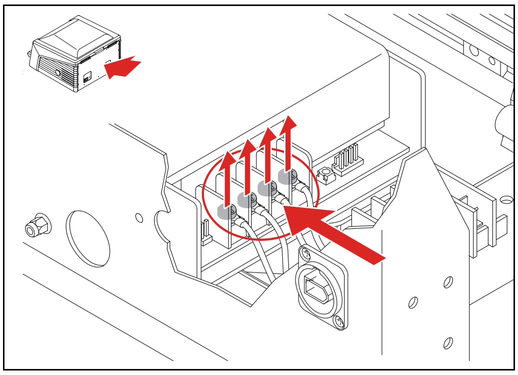


Figure 248

(15) Open screws at input side of power supply.

(16) Remove power supply.

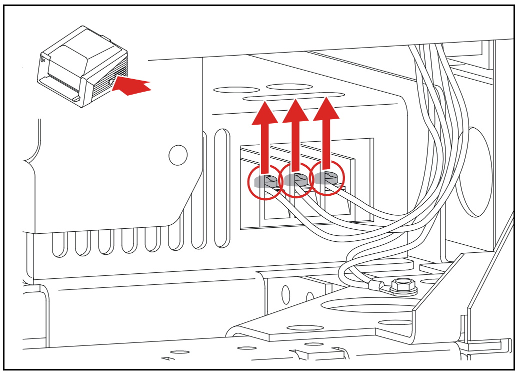


Figure 249

DANGER:

If the cables at the input side of the power supply are mounted wrong, the housing of the digitizer can be connected to high voltage. Risk of live.

Mount the cables at the power supply input as indicated on the cables and shown in Figure 250.

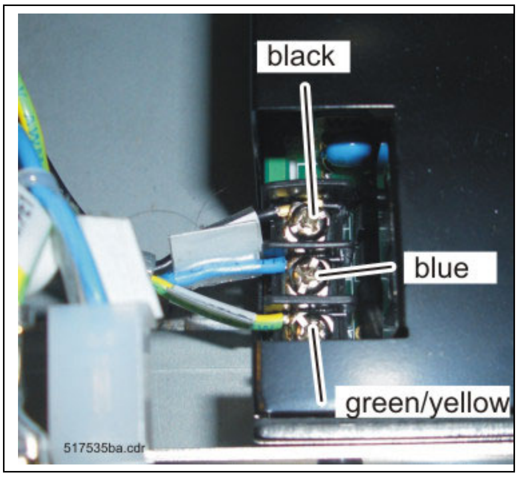


Figure 250

ASSEMBLY:

(1) Mount in reverse order.
See IMPORTANT note below.

IMPORTANT:

Connect the cables at the output side as shown in Figure 251.

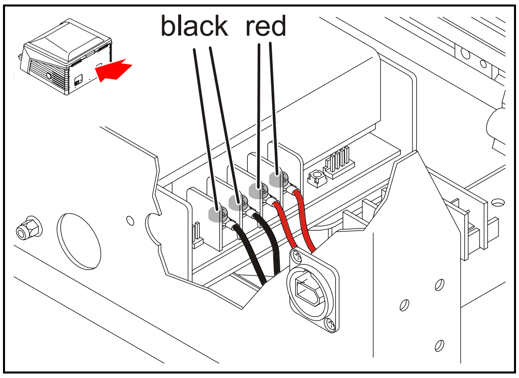


Figure 251

(2) When finished with re-mounting, continue with:

- Basic Protective Earth Test. See section 4.3.1.
- Electrical Check according to National Regulations. See section 4.3.2.
- Verification of the successful power supply replacement. See section 4.3.3.

4.3.1 Basic Protective Earth Test

(1) Use a multimeter that is capable to measure a resistance < 1 Ohm.

(2) Put one probe at the ground connector of the mains input.

(3) Put the other probe at a few metallic parts, the customer could touch.
The electrical resistance has to be ≤ 0.2 Ohm.
Refer to Figure 252.

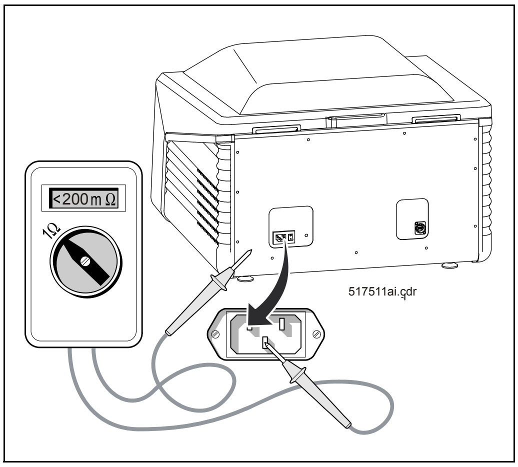


Figure 252

(4) Insert the power cord at the digitizer side; leave it disconnected at the wall side.

(5) Put one probe at the ground connector of the mains connector.

(6) Put the other probe at a few metallic parts, the customer could touch.
The electrical resistance in this case has to be ≤ 0.3 Ohm.
Refer to Figure 253.

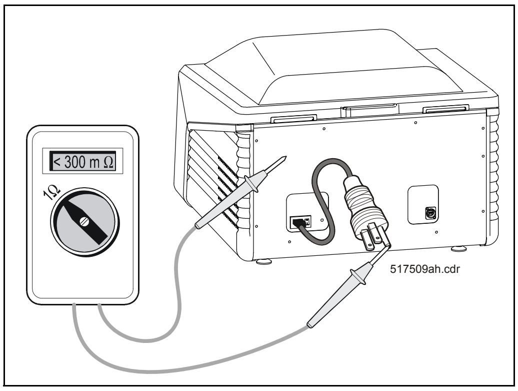


Figure 253

IMPORTANT:
In case the electrical resistance of one measurement exceeds the limits (0.2 Ohm without mains cable; 0.3 Ohm with mains cable) check the digitizer for loose grounding connections!

4.3.2 Electrical Check according to National Regulations

(1) Perform the electrical check according to National Regulations.
Example for Germany: BGV A3 and DIN VDE 0751 or subsequent regulations.

4.3.3 Verification of the successful Power Supply Replacement

Verification:

(1) Switch off/on the digitizer.

(2) Wait till the status indicator at the digitizer switches to green (takes approx. 1,5 min.).

(3) Insert cassette with unexposed IP in the digitizer.

(4) At the workstation select examination type “System diagnosis – Flatfield”.

(5) Select “ID” to identify the image: Scanning starts.

(6) Confirm that the image arrives at the workstation.

(7) Reject the image.

Result: The power supply is replaced.

Chapter 3.6

Repair and Service

Adjustments and Calibrations

Document No: DD+DIS150.06E

CR 30-X

Type 5175 / 100/110

► Purpose of this Document

This document describes all adjustments and calibrations as well as their purpose.

► Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.2:
1.3	10-2009	• Added drawer adjustment tool "version 2", which allows to check min. and max. height position. See section 2.1. • Revised PMI Board Carrier Position Adjustment and Cassette Unit Safety Switch Position Adjustment: Replaced (pixel based) images by vector drawings. See sections 2.2 and 2.3. • Revised Cassette Edge Sensor Position Adjustment: Added multimeter as optional tool. See section 2.4. • Added "laser beam check and adjustment". See section 2.5. • Revised Shading Calibration Procedure: Shifted FLFS specific items into an appendix section. See section 3.1. • Revised Stall Calibration Procedure: Removed overview table about which stall calibration has to be performed at which replacement, as this is described at each replacement procedure. See section 3.2.

► Referenced Documents

Document	Title
DD+DIS150.06E	CR 30-X Service Documentation Chapter 3.5, Replacements / Repair Procedures

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► Manufacturer

Agfa HealthCare N.V.

Publisher

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D - 81539 München
Germany

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

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1 Overview of Adjustments and Calibrations

The following tables give an overview of adjustments and calibrations for the digitizer.

Adjustment Type	Use Case	Section
Drawer Unit Adjustment	After replacement of the drawer unit	2.1
PMI board carrier position adjustment	After replacement of the PMT with light collector	2.2
Cassette unit safety switch position adjustment	After replacement of cassette unit safety switch	2.3
Cassette edge sensor position adjustment	After replacement of cassette edge sensor	2.4
Laser beam position check and adjustment	• In case of sporadic or persistent errors 10761 or 10767 to identify the possible root cause of an incorrect laser beam position • To solve errors 10761 or 10767, if an incorrect laser beam position is the root cause	2.5

Calibration Type	Use Case	Section
Shading calibration	• After replacement of the PMT with light collector • After replacement of the optic module • After the laser beam position adjustment • Whenever the PMT or light collector have been removed (e.g. for replacing the slow scan module). • Whenever stripes in slow scan position are visible, which cannot be removed by cleaning of the scan line with the cleaning brush.	3.1
Stall Calibration	• After replacement of a motor or mechanical assembly where a motor with stall detection is built in • After replacement of the IP handling board (as this has the motor controllers built in) • During preventive maintenance	3.2

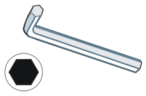
2 Adjustments

2.1 Drawer Unit Adjustment

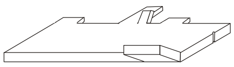
Purpose Adjustment of the optimum height and lateral position of the upper drawer unit plate for reliable image plate transport in and out of the cassette.

Use Case After replacement of the drawer unit

REQUIRED TOOLS:



3 mm



Drawer adjustment tool

NOTE:

Two versions of the drawer adjustment tool are available:

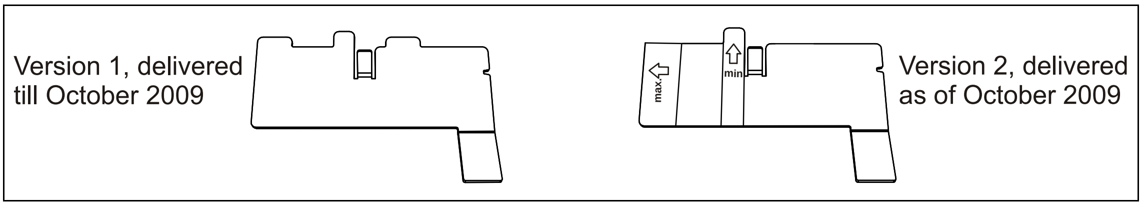


Figure 1

Difference: Drawer adjustment tool version 2 has an additional gauge integrated to check the maximum height position (marked with text "max.").

The drawer adjustment tool is part of delivery of following spare parts:

- Drawer Unit
- Drawer Motor

Its is also available from spare parts stock with spare part number*: CM+9 5175 6001 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

This document describes the adjustment with drawer adjustment tool version 2. Where applicable, differences to version 1 are described.

REQUIRED TIME:
30 minutes

The drawer unit adjustment is split up in three parts:

#	Drawer Unit Adjustment Part	Section
1	Preparing the adjustment	2.1.1
2	Checking and adjusting the lateral position	2.1.2
3	Checking and adjusting the height position	2.1.3

2.1.1 Preparing the Drawer Unit Adjustment

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

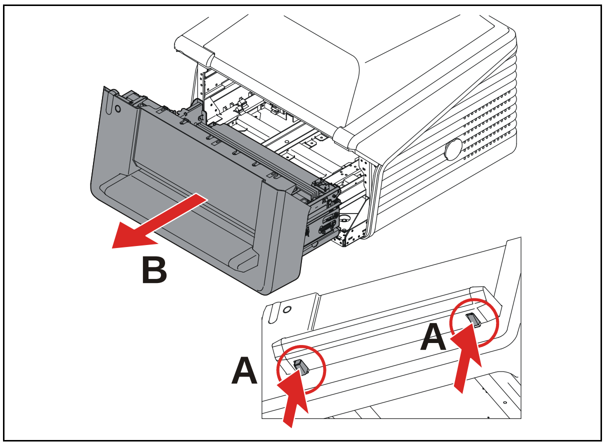


Figure 2

CAUTION:

Less reliable IP run possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(5) Remove the front cover.
See chapter 3.5.

(6) Remove the erasure unit.
See chapter 3.5.

(7) Slide IP guide plate to the left and lift it out.

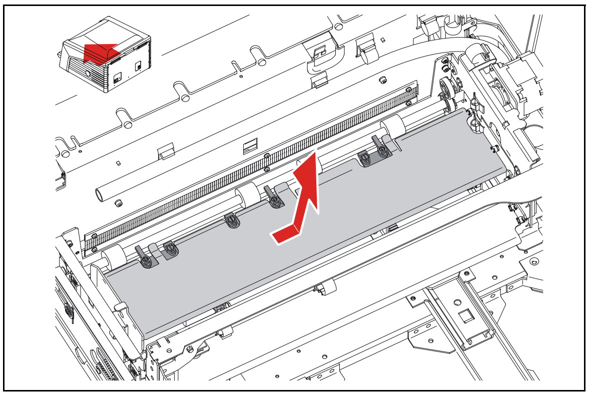


Figure 3

(8) Pull at the toothed belt to open the cassette opener.

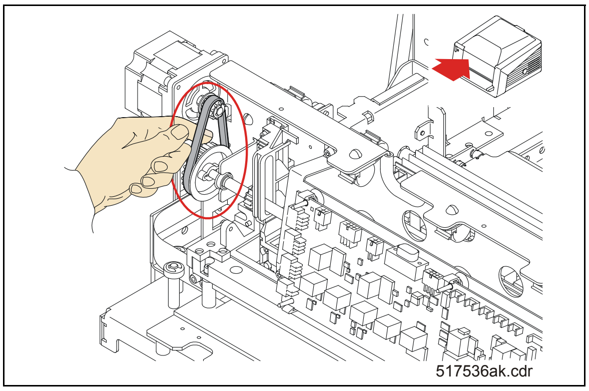


Figure 4

CAUTION:

Misalignment of drawer unit possible when pushing it at the upper plate.

When pushing the drawer unit only do this via drawer unit axle.

(9) Push drawer unit at the axle completely to the front.

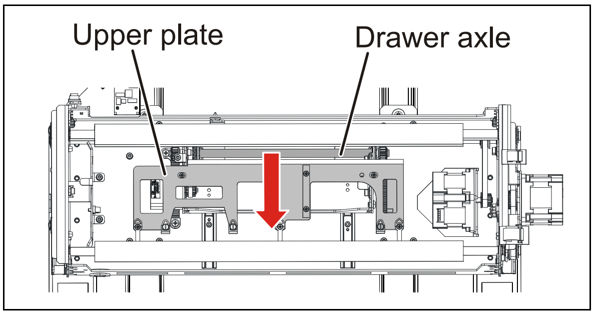


Figure 5

2.1.2 Checking and Adjusting the lateral Position

(1) Insert the drawer unit adjustment tool in the cassette unit entry.

(2) Push it completely to the right.

(3) Check, whether plastic finger at drawer unit is aligned with the lateral stop of the drawer adjustment tool. See Figure 7.

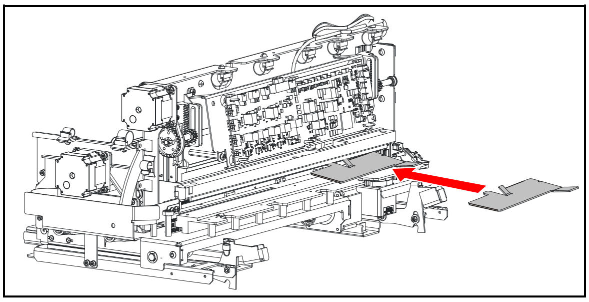


Figure 6

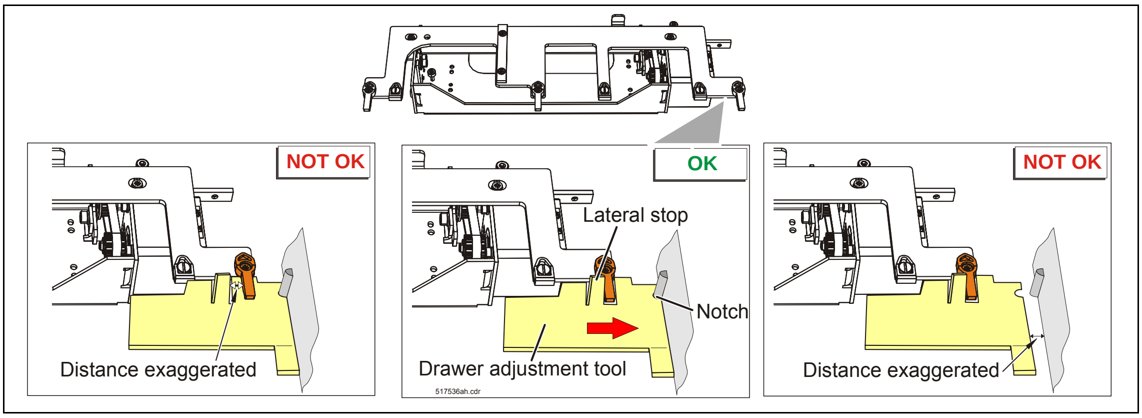

NOT OK
Distance exaggerated
OK
Lateral stop
Notch
Drawer adjustment tool
517536ah.cdr
NOT OK
Distance exaggerated

Figure 7

IMPORTANT:

When inserting the drawer unit adjustment tool, be sure, that the notch of the tool is properly inserted in the right hand side of the cassette unit entry. See Figure 7.

Evaluation

In case the lateral stop is aligned with the plastic finger at the drawer unit there is no adjustment required. Continue with section 2.1.3.
Otherwise perform lateral adjustment as described in next steps.

LATERAL ADJUSTMENT

(1) Open the lateral position fixation screws. See arrows.

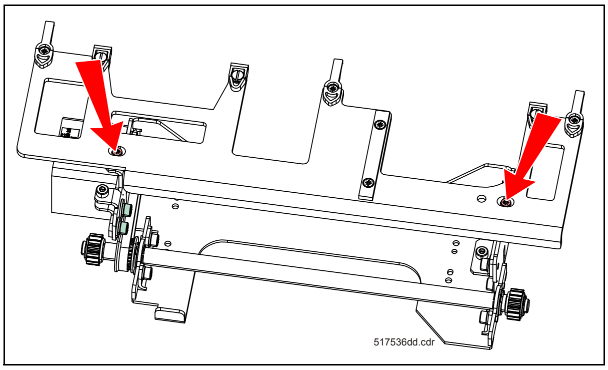

517536dd.cdr

Figure 8

(2) Shift the drawer unit upper plate this way, that:

- The plastic finger at the drawer unit is aligned with the lateral stop
- While the drawer adjustment tool is shifted to the cassette input side wall.

(3) Fasten the lateral position fixation screws.

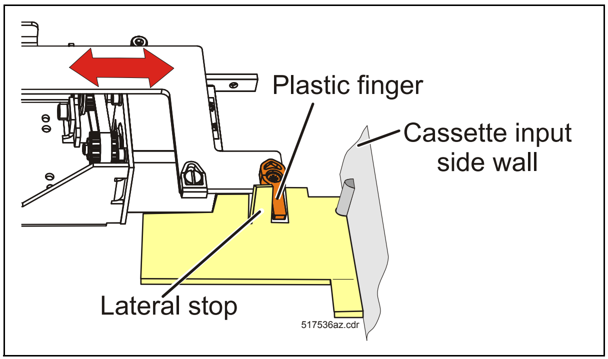

Plastic finger
Cassette input side wall
Lateral stop
517536az.cdr

Figure 9

2.1.3 Checking and Adjusting the Height

(1) Insert the drawer unit adjustment tool in the cassette unit entry.

(2) Check the minimum and maximum height. See also IMPORTANT note below.

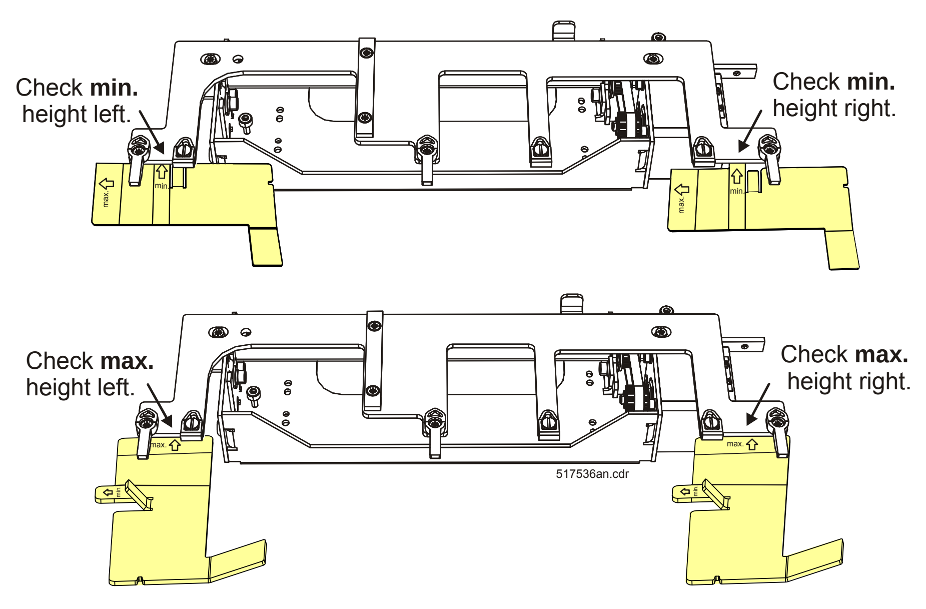

Check **min.** height left.
Check **min.** height right.
max
min
Check **max.** height left.
Check **max.** height right.
max.
min
517536an.cdr

Figure 10

IMPORTANT:

Perform the min. height check between magnet and plastic finger.

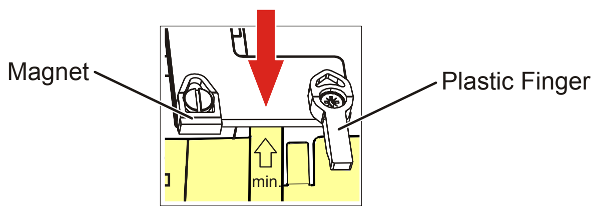

Magnet
Plastic Finger
min.

Figure 11

Expected result:

- The plate marked with "min." (= minimum height) has to fit under the drawer upper plate.
- The plate marked with "max." (= maximum height) may **not** fit under the drawer upper plate.

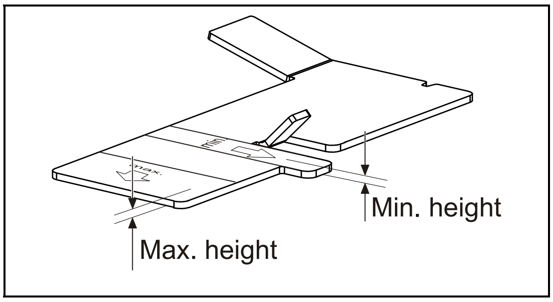


Figure 12

NOTE:

With drawer adjustment tool version 1 it is possible to check the minimum height only. It is not possible to check the maximum height.

Evaluation

In case the height is OK on both sides there is no height adjustment required. Otherwise proceed with next steps.

HEIGHT ADJUSTMENT

(1) Open the four height adjustment fixation screws (see arrows).

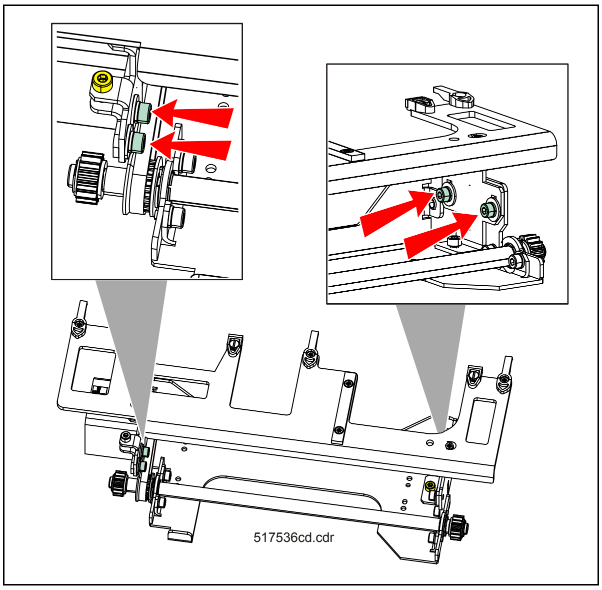


Figure 13

(2) Adjust the height with the height adjustment screws (see arrows).

(3) Press down the drawer unit upper plate after each adjustment cycle (before checking the height again).

(4) Fasten the four height adjustment fixation screws.

(5) Again, check the height adjustment (min. and max.) with the drawer adjustment tool.

(6) Repeat adjustment if required.

(7) Mount IP guide plate, erasure unit and front cover.

(8) Connect the mains cable.

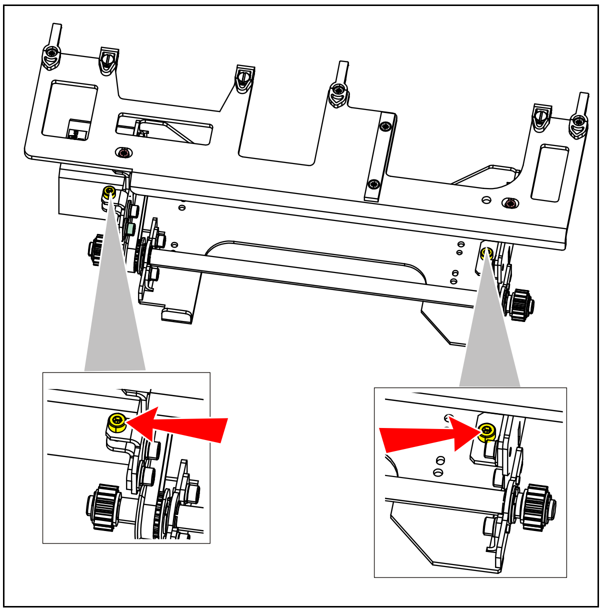


Figure 14

Verification

(1) Switch on the digitizer.

(2) Wait till the green light at the user interface lights up (takes approximately 1 minute).

(3) Scan one image plate with each cassette format the customer is using.

Result

The drawer unit adjustment is performed.

2.2 PMI Board Carrier Position Adjustment

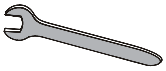
Purpose

Adjust the position of the light collector this way that it is stress-free mounted. Miss-alignment can lead to IP jams, laser reflections or cracks in the light collector.

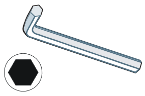
Use Case

After replacement of the Photomultiplier (PMT) with light collector

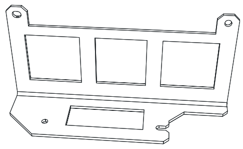
REQUIRED TOOLS:



13 mm



6 mm



PMT gauge
(Part of delivery)

REQUIRED TIME:
30 minutes

IMPORTANT:

The PMI Board Carrier Position Adjustment is part of the replacement procedure “PMT with Light Collector”.

The adjustment has to be done before mounting the PMT, after mounting optic module and PMI board carrier.

MECHANICAL ADJUSTMENT:

(1) Shift the PMI carrier to the rear.

(2) Fasten the four fixation screws.

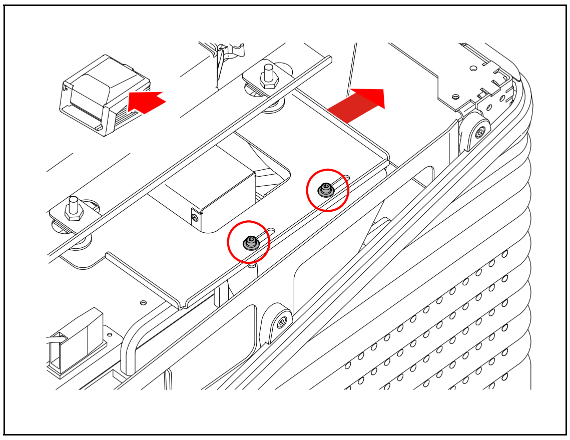


Figure 15

(3) Mount the PMT gauge on the light collector.

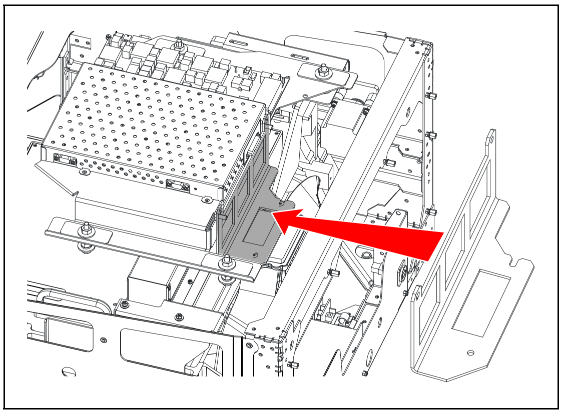


Figure 16

(4) Check the distance between PMT gauge and PMI carrier (see two circles in Figure 17):
The PMI carrier should just touch the PMT gauge.

(5) If the distance is OK, continue with step (9), otherwise continue with next step.

(6) Open the four adjustment screws. See arrows in Figure 17.

(7) Adjust horizontal position as well as the angle of the PMI board carrier.

(8) Fasten the four adjustment screws.

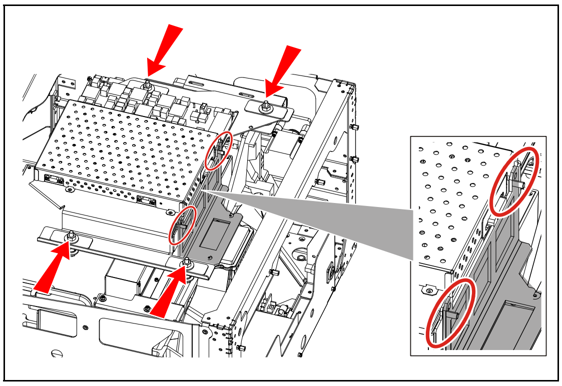


Figure 17

(9) Remove the PMI carrier.

(10) Remove PMT gauge.

(11) Mount PMT on the light collector.

(12) Keeping the PMT in its mounting position by hand, mount the PMI board carrier. See Figure 18.

(13) Re-assemble the digitizer.

(14) Perform a shading calibration.

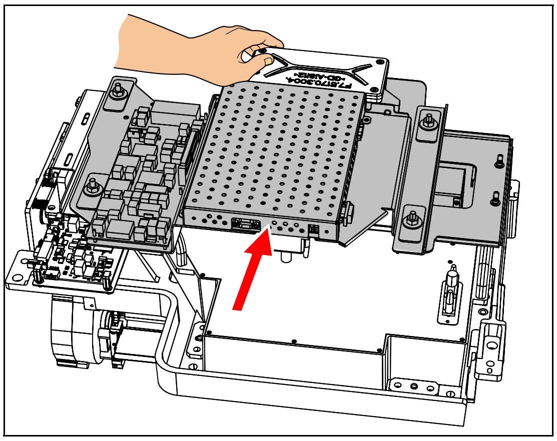


Figure 18

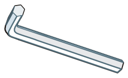
Result The PMI board carrier is adjusted this way, that the light collector is mounted stress free.

2.3 Cassette Unit Safety Switch Position Adjustment

Purpose Adjustment of the switch-off position of the safety switch

Use Case After replacement of the cassette unit safety switch

REQUIRED TOOLS:



3 mm

REQUIRED TIME:
20 minutes

2.3.1 Checking the Switch Position

(1) Close the cassette unit.

(2) Switch the digitizer on.

(3) Check: With closed cassette unit the switch may not interrupt the power: The status indicator LED lights up.

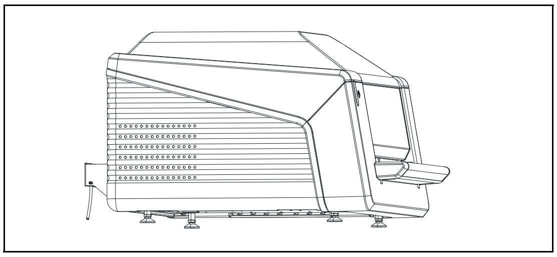


Figure 19

(4) Open the cassette unit approximately 1 cm.

(5) Check: With cassette unit opened approximately 1 cm, the switch must switch off the digitizer.
If it does not switch off, continue with section 2.3.2.

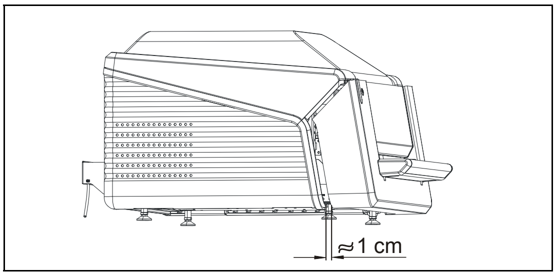


Figure 20

2.3.2 Adjusting the Switch Position

MECHANICAL ADJUSTMENT:

(1) Remove the power cord in the rear.

(2) Open the cassette unit.

(3) Remove the top cover. See chapter 3.5, Replacements.

(4) Remove the left cover. See chapter 3.5, Replacements.

(5) Open the adjustment screws. See arrows in Figure 21.

(6) Shift the switch to the front (switch does not close with inserted cassette unit) or to the rear (switch switches too late when cassette unit is opened).

(7) Repeat the check as described in section. 2.3.1.

(8) Mount covers.

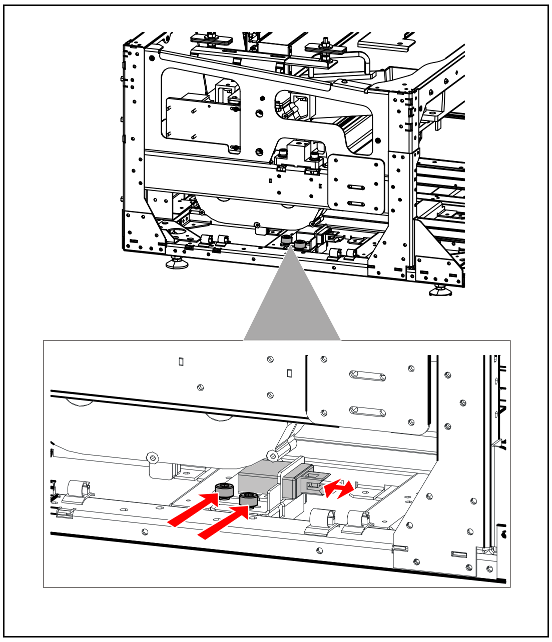


Figure 21

Verification

(1) Connect the power cord.
(2) Switch on the digitizer.
(3) Open the cassette unit approximately 1 cm.
(4) Confirm that the switch opens and switches off the digitizer.
(5) Close the cassette unit.
(6) Wait till the green LED lights up.

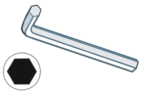
Result The cassette unit safety switch is adjusted.

2.4 Cassette Edge Sensor Position Adjustment

Purpose Adjustment of the switch position, so that it reliably detects whether the cassette is inserted the right way.

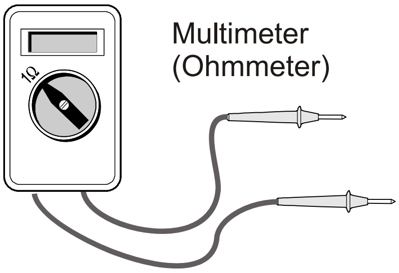
Use Case After replacement of the cassette edge sensor

REQUIRED TOOLS:



1,5 mm

Optional:



Multimeter
(Ohmmeter)

REQUIRED TIME:
20 minutes

(1) Switch off the digitizer.

(2) Disconnect the mains cable.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

(5) Remove the front cover.

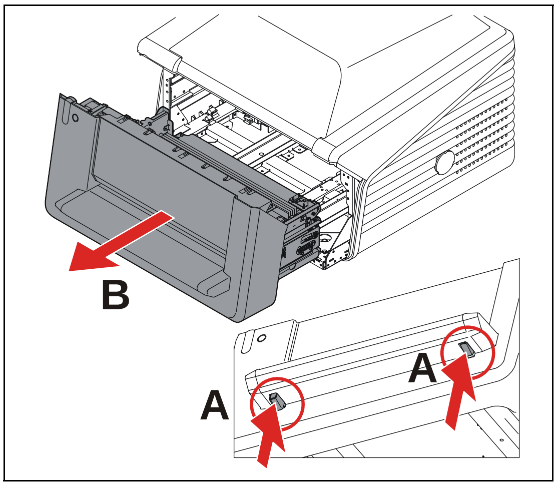


Figure 22

MECHANICAL ADJUSTMENT:

(1) Insert a cassette the right way, i.e. black tube side to the top and the shutter inside the digitizer.

(2) Push the cassette to the right: The cassette edge sensor has to switch.

- A click must be audible.
- When using a multimeter, the resistance has to be close to 0 Ω.

(3) If the sensor does not switch, open the fixation screws at the cassette edge sensor and push it more to the left. Fasten the fixation screws and repeat step (2).

(4) If the sensor switches, continue with next step.

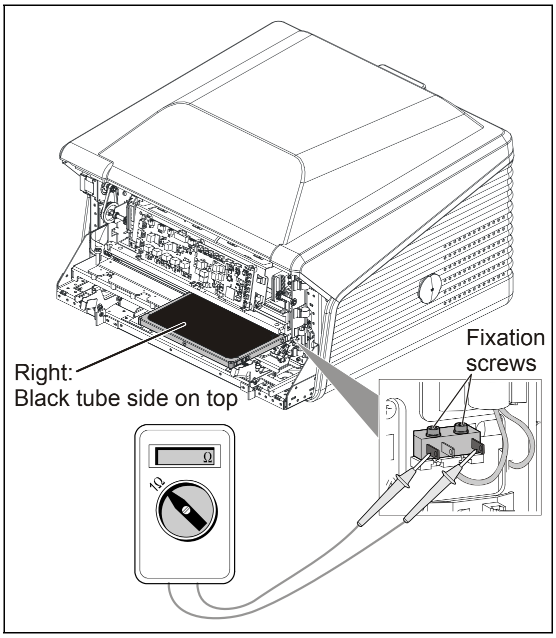


Figure 23

(5) Insert a cassette the wrong way, i.e. red side to the top and the shutter inside the digitizer.

(6) Push the cassette to the right: The cassette edge sensor may not switch:

- No click may be audible.
- When using a multimeter, the resistance should be outside the measuring range.

(7) If the sensor switches, open the fixation screws at the cassette edge sensor and push it more to the right. Repeat step (5).

(8) If the sensor does not switch, repeat the complete procedure once more, to confirm the proper adjustment.

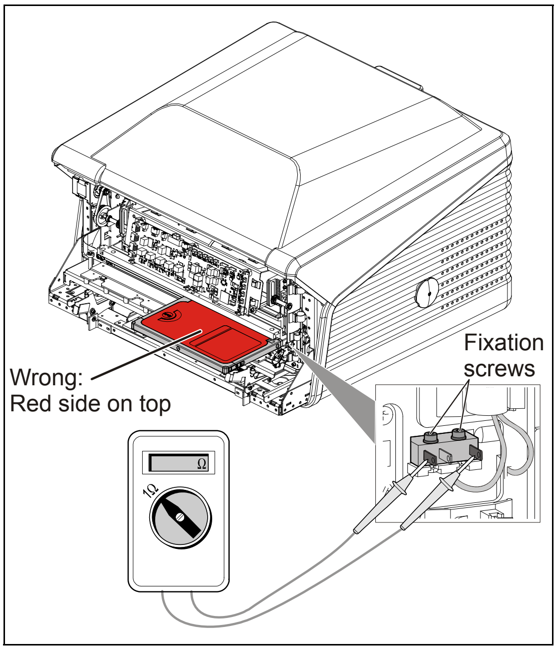


Figure 24

Verification

(1) Switch on the digitizer.

(2) Wait till the green light at the user interface lights up
(takes approximately 1 minute).

(3) Insert a cassette the wrong way: The digitizer may not recognize the cassette.

(4) Insert the cassette the right way: The digitizer has to recognize the cassette.

Result The cassette edge sensor is adjusted.

2.5 Laser Beam Position Check and Adjustment

Purpose

The purpose of the "Laser Beam Position Check and Adjustment" is:

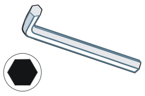
- Checking the laser beam position, to see, whether it is centered to the calibration board.
- Adjustment of the optic module this way that the laser beam position is centered to the calibration board.

Use Case

Perform the "Laser Beam Position Check and Adjustment" in following cases:

- In case of sporadic or persistent errors 10761 or 10767 to identify the possible root cause of an incorrect laser beam position
- To solve errors 10761 or 10767, if an incorrect laser beam position is the root cause

REQUIRED TOOLS:



3 mm

REQUIRED TIME:
Approximately 30 minutes

IMPORTANT:

This adjustment requires:

- Calibration board version 2* and
- Distributor board version 2* (see Figure 25) and
- Software ≥ CRE_1511**

For digitizers with lower serial numbers, which do not fulfil the requirements, it can also be performed with the Laser Beam Detection Toolkit, spare part number***:
CM+9 5175 2940 0

The Laser Beam Detection Toolkit has instructions for installation and adjustment included.

* Installed in SN ≥ 6397 (Type 5175/100) and SN ≥ 5935 (Type 5175/110) and in all digitizers, where the calibration board was exchanged after September 2009.

** Installed in SN ≥ 5570 (Type 5175/100) and SN ≥ 6377 (Type 5175/110).

*** The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

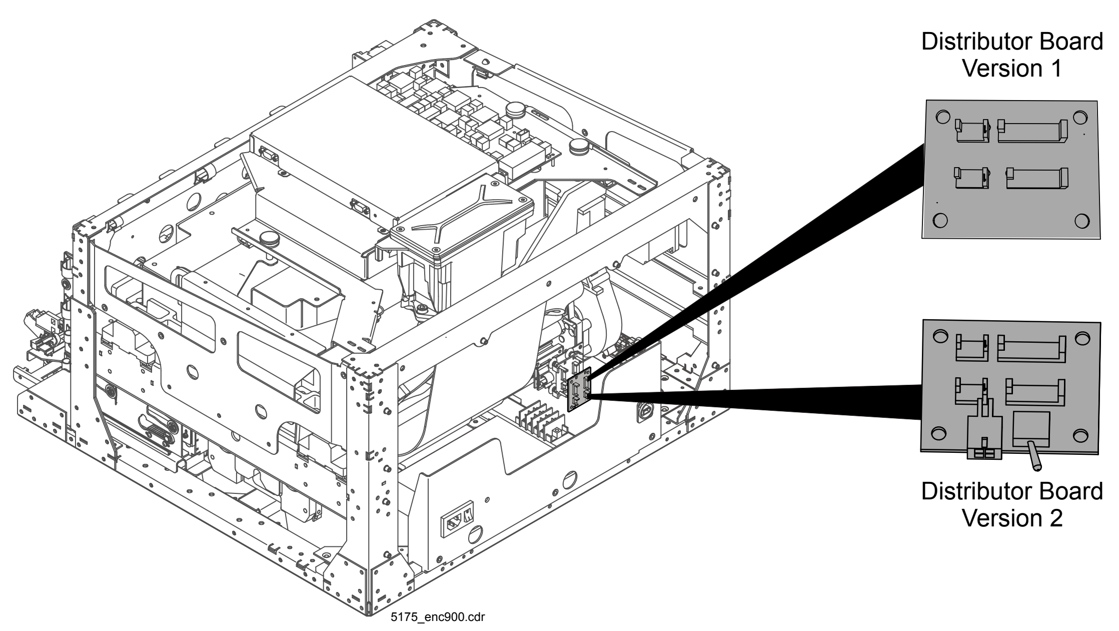

Distributor Board
Version 1
Distributor Board
Version 2
5175_enc900.cdr

Figure 25: Distributor Board Version 2 is one prerequisite to perform the "Laser Beam Position Check and Adjustment"

The laser beam position check and adjustment is divided in following steps:

#	Step	Section
1	Performing the Laser Beam Position Check	2.5.1
2	Performing the Laser Beam Position Adjustment	2.5.2
3	Verifying the Laser Beam Position Check and Adjustment	2.5.3

NOTE:

Short description of the **laser beam position check**:

- The laser beam is switched on via service client.
- By putting the switch on the distributor board to ON position the laser beam position check functionality is activated: The yellow "LED 1" lights up.
- If "LED 2" and "LED 3" on the distribution board are light up, the laser beam position is OK.

Short description of the **laser beam position adjustment**:

- The laser beam is switched on via service client.
- By putting the switch on the distributor board to ON position the laser beam position check functionality is activated: The yellow "LED 1" lights up.
- By opening the screws at the two Optic Module Position Plates the Optic Module can be shifted this way that both Laser Beam Position Detection Sensors are covered by the laser beam. In this case LED 2 and LED 3 are light up.

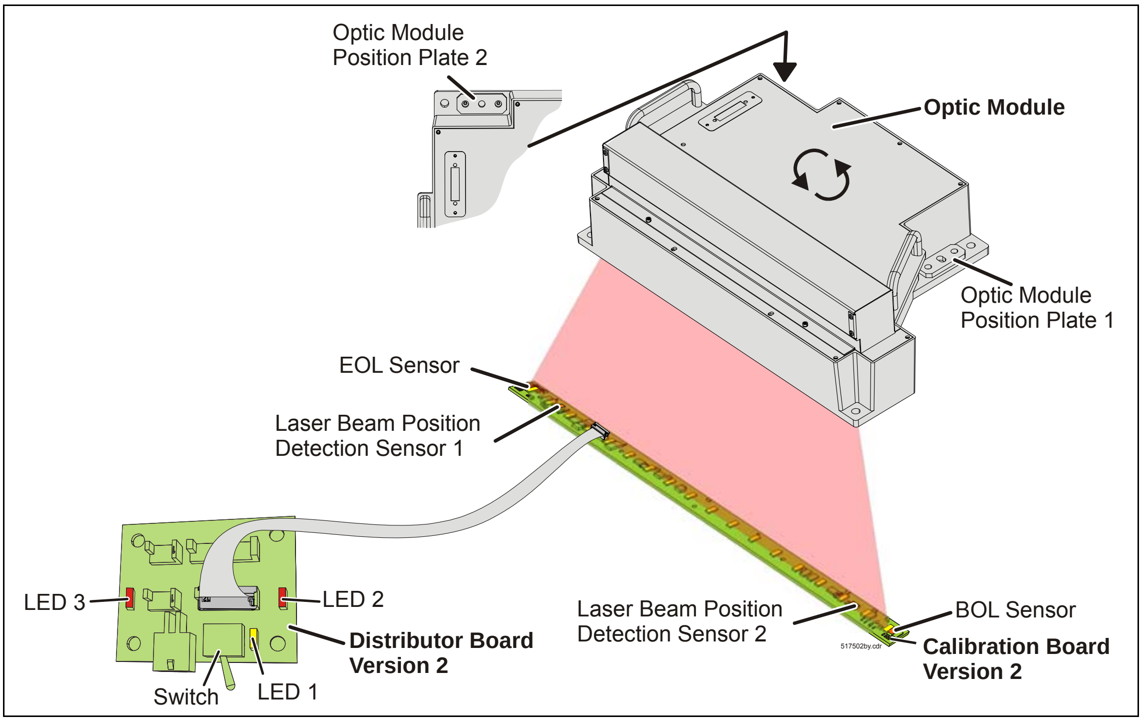

Optic Module
Position Plate 2
Optic Module
Optic Module
Position Plate 1
EOL Sensor
Laser Beam Position
Detection Sensor 1
LED 3
LED 2
Distributor Board
Version 2
Switch
LED 1
Laser Beam Position
Detection Sensor 2
BOL Sensor
Calibration Board
Version 2
517502by.cdr

Figure 26: Functional principle of the laser beam position check and adjustment

2.5.1 Performing the Laser Beam Position Check

(1) Switch off the digitizer.

(2) Remove power cord in the rear.

(3) Simultaneously press the two buttons (A) positioned underneath the feed table.

(4) Pull out cassette unit (B).

(5) Remove top cover.

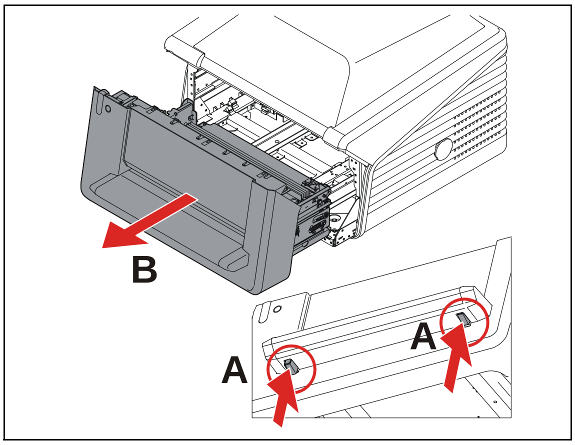


Figure 27

(6) Set the switch on the distributor board to the ON position.

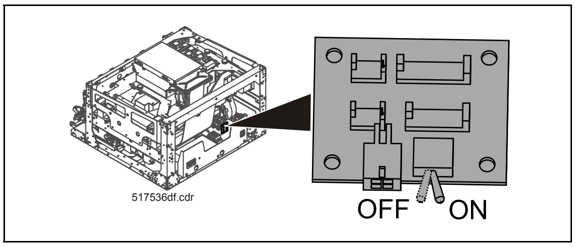


Figure 28

DANGER:

If the power cord is connected and the main switch is switched on the input side of the power supply is connected to high voltage. Risk of live.

Do not touch the input side of the power supply by hand or with any tool.

(7) Connect the power cord in the rear.

(8) Switch on the digitizer.
Observe safety note above.

(9) Check that the yellow LED on the distribution board is ON: This is the proof, that the check functionality is activated.

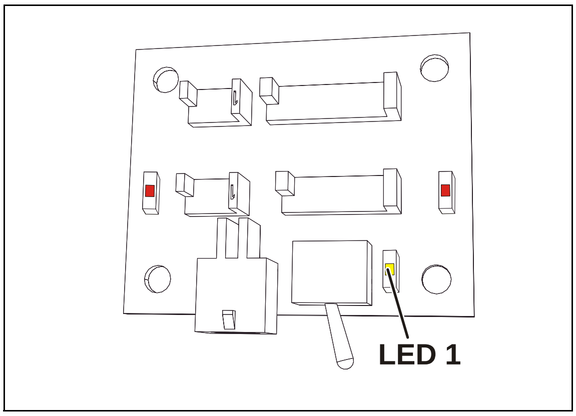


Figure 29

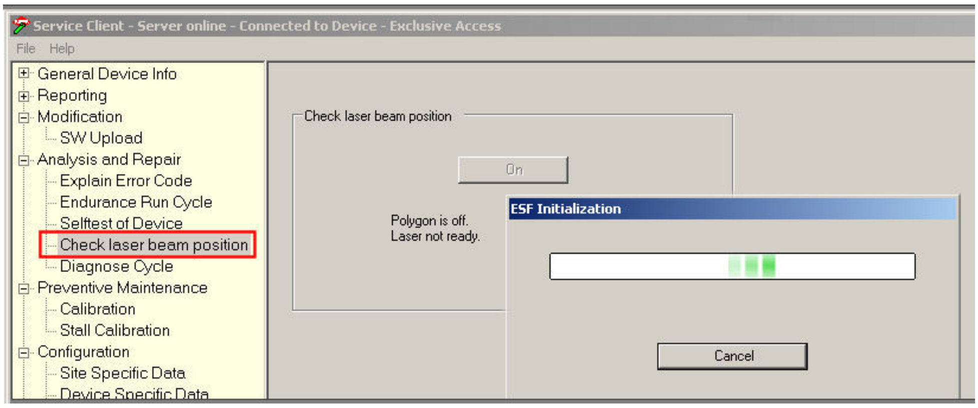
(10) Log-off the current user at the control PC.

(11) Login as user “crservice”.

(12) Select menu:
`<Start - Programs - Agfa CR 30-X - Service Client>`

(13) Enter user name and password.

(14) Select menu:
`<Analysis and Repair – Check laser beam position>`:
A window "ESF Initialization" opens and stays for approximately one minute. See Figure 30.


Service Client - Server online - Connected to Device - Exclusive Access
File Help
General Device Info
Reporting
Modification
SW Upload
Analysis and Repair
Explain Error Code
Endurance Run Cycle
Selftest of Device
Check laser beam position
Diagnose Cycle
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Site Specific Data
Device Specific Data
Check laser beam position
On
ESF Initialization
Cancel

Polygon is off.
Laser not ready.

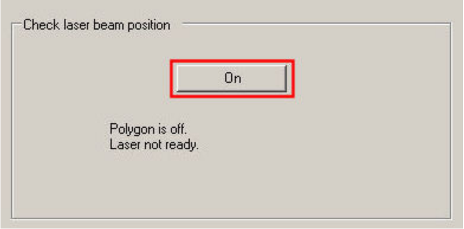
Figure 30

WARNING:

Laser light. Eye injuries possible.

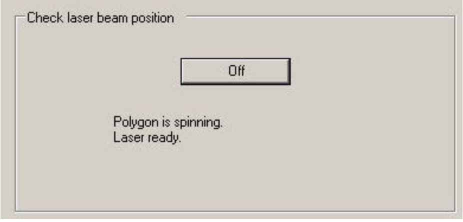
Do not keep any tool in the laser beam while the laser is switched on.

(15) Select the button **`<On>`** to switch on the laser beam. See Figure 31.
The status message shows **`<Polygon is spinning. Laser ready>`**.
See Figure 32. The Polygon motor is audible.


Check laser beam position
On

Polygon is off.
Laser not ready.

Figure 31


Check laser beam position
Off

Polygon is spinning.
Laser ready.

Figure 32

NOTE:

The laser beam switches off automatically after 30 minutes.

(16) Check the LEDs on the distribution board.

(17) Evaluate as follows (see table below):

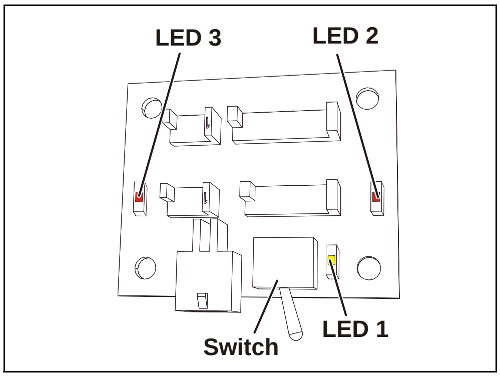


Figure 33

Evaluation of the LEDs on the distribution board:

#	Status			Action
1	LED 1 ON	LED 2 ON	LED 3 ON	No further action required. Laser beam position OK. Continue with next step.
2	LED 1 ON	LED 2 OFF	LED 3 ON	Laser beam position adjustment required. Continue with section 2.5.2.
3	LED 1 ON	LED 2 ON	LED 3 OFF	
4	LED 1 ON	LED 2 OFF	LED 3 OFF	Check, whether laser beam is really switched on: Look from the digitizer right hand side, whether the red laser line is visible. For more information refer to the troubleshooting guide, DD+DIS151.08E. If laser beam is visible, the laser beam position adjustment is required. Continue with section 2.5.2.
5	LED 1 OFF	LED 2 OFF	LED 3 OFF	Set switch to ON position.

CAUTION:

If switch on distributor board stays in "ON" position during digitizer operation, reduced image quality possible.

Set the switch on the distributor board to the OFF position before handing the digitizer over to the customer.

(18) Set the switch on the distributor board to the OFF position.

(19) Mount all covers.

(20) Connect the cables in the rear.

(21) Continue with section 2.5.3.

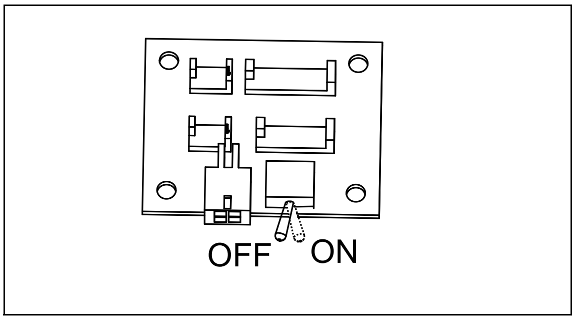


Figure 34

Result The Laser Beam Position Check is performed.

2.5.2 Performing the Laser Beam Position Adjustment

NOTE:

Before starting the laser beam position adjustment, first perform the laser beam position check. See steps (1) to (17) in section 2.5.1.

(1) Open the four optic module fixation screws.

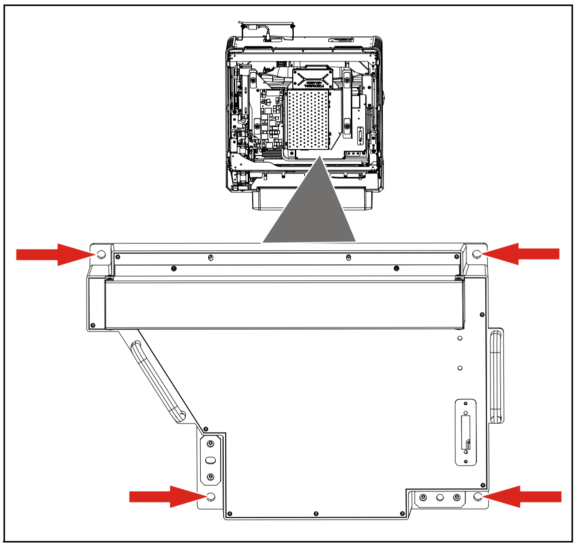


Figure 35

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(2) Open the four screws at the optic module position plates (secured with red lacquer).

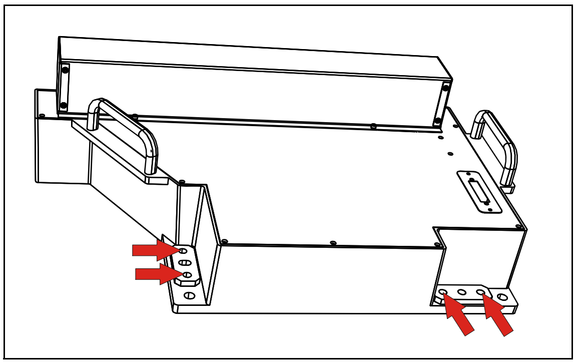


Figure 36

(3) Shift the optic module gently this way that both red LEDs (LED 2 and LED 3) light up.

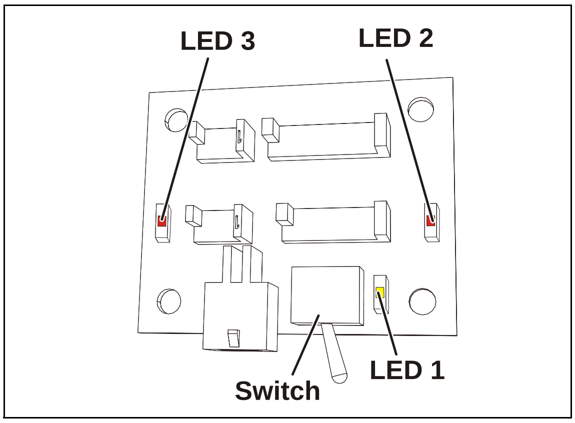


Figure 37

(4) Fasten the four screws at the optic module position plates.

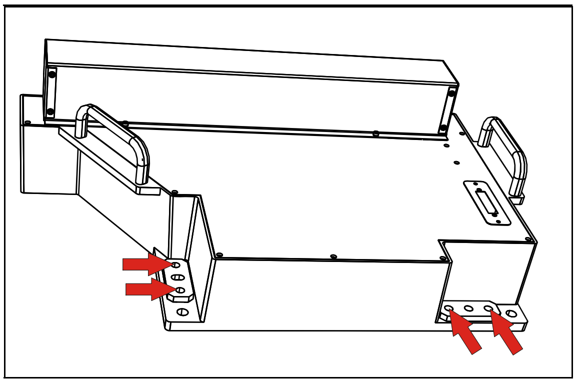


Figure 38

(5) Fasten the four optic module mounting screws.

(6) Once more check the red LED 2 and LED 3: They should stay light up when all four optic module mounting screws are fastened.

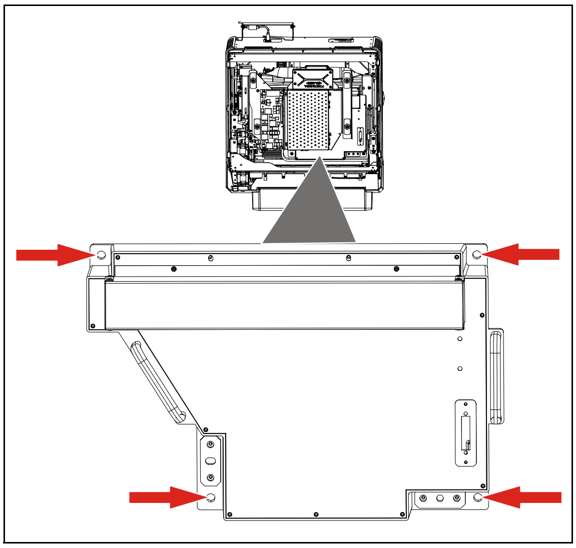


Figure 39

CAUTION:

If switch on distributor board stays in "ON" position during digitizer operation, reduced image quality possible.

Set the switch on the distributor board to the OFF position before handing the digitizer over to the customer.

(7) Set the switch on the distributor board to OFF position: The yellow LED 1 does not light up anymore.

(8) Mount the top cover.

(9) Close the cassette unit.

(10) Connect the cables in the rear: Observe the FireWire connector direction. See Figure 40.

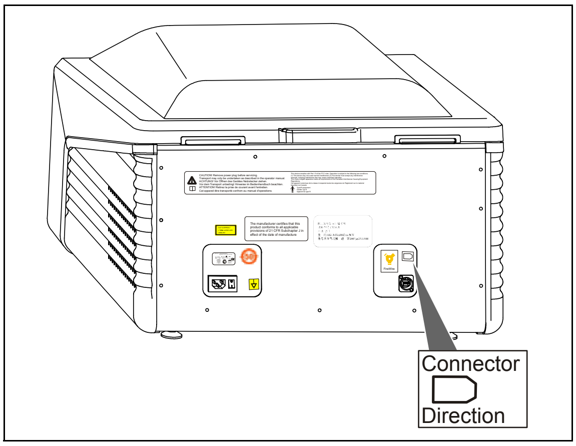


Figure 40

CALIBRATION:

(1) Perform a shading calibration. Refer to section 3.1 of this chapter.

2.5.3 Verifying the Laser Beam Position Check and Adjustment

Verification **If only the laser beam position check has been performed:**

(1) Insert cassette with unexposed IP in the digitizer.

(2) At the workstation select examination type “System diagnosis – Flatfield”.

(3) Select “ID” to identify the image: Scanning starts.

(4) Confirm that the image arrives at the workstation.

(5) Reject the image.

If the laser beam position adjustment has been performed:

Verification is done with the shading calibration procedure.

Result The laser beam position check and adjustment is performed.

3 Calibrations

3.1 Shading Calibration

Purpose

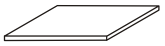
Determine the sensitivity of the scanning system for each pixel of the scan line: A flatfield is scanned. For each pixel a sensitivity factor is stored in an EEPROM on the PMT.

Use Case

Perform a shading calibration in following cases:

- After replacement of the Photomultiplier (PMT) with light collector
- After replacement of the optic module
- After the laser beam position adjustment
- Whenever the PMT or light collector have been removed (e.g. for replacing the slow scan module)
- Whenever stripes in slow scan position are visible, which cannot be removed by cleaning of the scan line with the cleaning brush

REQUIRED TOOLS:



1,5 mm Copper Filter*
CM+9 5155 1015 2

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

REQUIRED TIME:
60 minutes

(1) Select the largest available cassette. If the largest available cassette is only a Full Leg / Full Spine (FLFS) Cassette, use this cassette.
In this case see the special instructions for Shading Calibration with a FLFS cassette in section 3.1.3.

(2) Open the cassette and check the image plate (IP) for scratches. If no scratches are visible, select this IP.

(3) Erase the IP.

(4) Mount the Cu-filter below the collimation window at the X-ray device.

(5) Place the cassette in length direction to the X-ray tube.

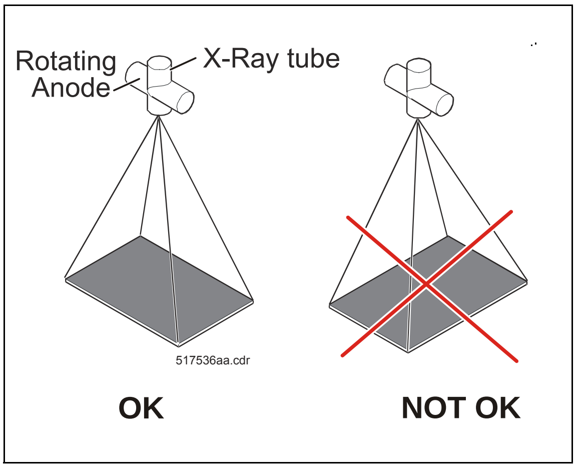


Figure 41

(6) Ensure that the entire image plate is fully exposed! The collimated field must be larger than the image plate.

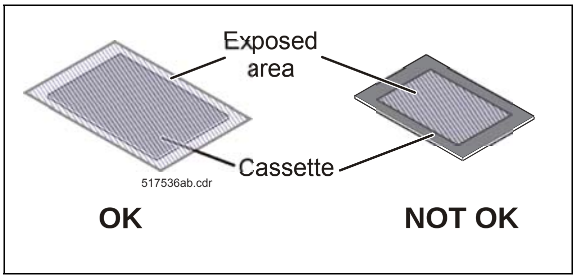


Figure 42

(7) Select the following exposure parameters to obtain a dose of 10 µGy:

- 12 mAs
- 75 kV
- 1.3 m (51,2”) distance
- Large focus

(8) Expose the cassette.

(9) Turn the cassette 180°.

(10) Expose the cassette again.
After the second exposure the cassette has been exposed in total with a dose of approximately 20 µGy.

(11) Remove the Cu-filter from the X-ray device.

(12) Start the CR 30-X Service Client: Select “Start - Programs - Agfa CR 30-X - Service Client”.

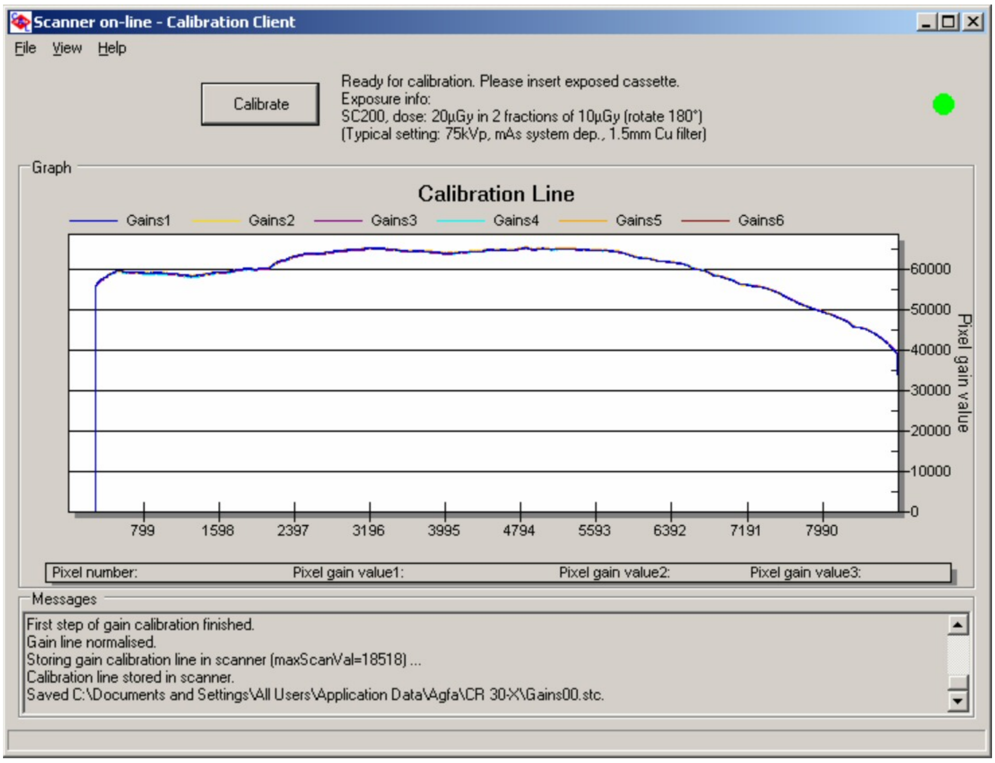
(13) Select "Preventive Maintenance - Calibration":
The current shading calibration is displayed. See Figure 43.

(14) Select "Calibrate".

(15) Insert the exposed cassette: The IP is scanned and erased.

(16) Wait until the calibration data is transferred. In case of an error refer to section 3.1.2, Possible Reasons for a failed Shading Calibration.

(17) Remove cassette from digitizer.


Scanner on-line - Calibration Client
File
View
Help
Calibrate
Graph
Calibration Line
Gains1
Gains2
Gains3
Gains4
Gains5
Gains6
60000
50000
40000
30000
20000
10000
0
Pixel gain value
799
1598
2397
3196
3995
4794
5593
6392
7191
7990
Pixel number:
Pixel gain value1:
Pixel gain value2:
Pixel gain value3:
Messages

Ready for calibration. Please insert exposed cassette.
Exposure info:
SC200, dose: 20µGy in 2 fractions of 10µGy (rotate 180°)
(Typical setting: 75kVp, mAs system dep., 1.5mm Cu filter)

```
First step of gain calibration finished.
Gain line normalised.
Storing gain calibration line in scanner (maxScanVal=18518) ...
Calibration line stored in scanner.
Saved C:\Documents and Settings\All Users\Application Data\Agfa\CR 30-X\Gains00.stc.
```

Figure 43: Example screenshot

NOTE:

- The digitizer records 6 shading calibration lines (Gain 1 to Gain 6), one for each facet of the polygon mirror.
- Additionally to the storage on the PMT, the calibration file is stored in the following folder:
  `C:\Documents and Settings\All Users\Application Data\Agfa\CR30-X\Gains00.stc`
  The calibration file is overwritten by the new one. To keep a certain calibration file, save it with a different name.

3.1.1 Verifying a successful Shading Calibration

Verification

1. Expose and scan a flatfield.
2. Print or archive the image.
3. Check the image for homogeneity in slow scan and fast scan direction.

Evaluation:

- If the scanned image does not show stripes in fast scan or slow scan direction or large area inhomogeneities no further action is required.
- If there are unacceptable effects in slow scan or fast scan direction, see Troubleshooting Guide, DD+DIS151.09E.

✓ NOTE:

- For external partners accessing the “Troubleshooting Guide” on MedNet, GSO Library may be restricted. In such a case please contact your local Agfa representative.
- Checking the images may only happen on light boxes and viewing stations that comply with the specified installation and configuration conditions for diagnostic reading. For details please refer to the respective instructions of the viewing stations or light boxes.
- The slow scan direction is always the long side of the scanned area.

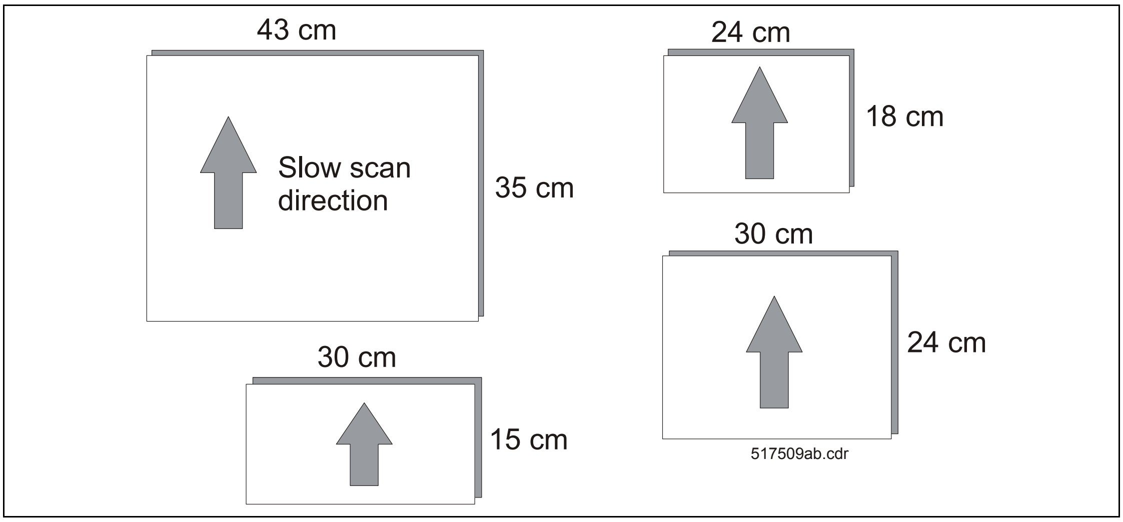


Figure 44: Slow scan direction

Result The shading calibration is executed.

3.1.2 Possible Reasons for a failed Shading Calibration

There are mainly following reasons for a failed shading calibration:

- Dirt or dust in the optical path
- Cassette wrong exposed (too high / low dose)
- Cassette not exposed on its full surface (wrong collimation)
- PMT exposed to direct sunlight before calibration (in this case PMT has lower sensitivity)
- PMI board carrier (with mounted PMT) misaligned

3.1.3 Appendix: Changes in the Shading Calibration Procedure if Full Leg / Full Spine Cassettes are in Use

✓ NOTE:

This section describes the changes in the shading calibration procedure, if a FLFS cassette is used. See section 3.1.

Reason for different proceeding: In opposite to Genrad (General Radiology) cassettes, FLFS cassettes do not have the complete IP area covered with a backscatter protection: The lead foil does not cover approximately 10 mm on the upper and lower side of the cassette.

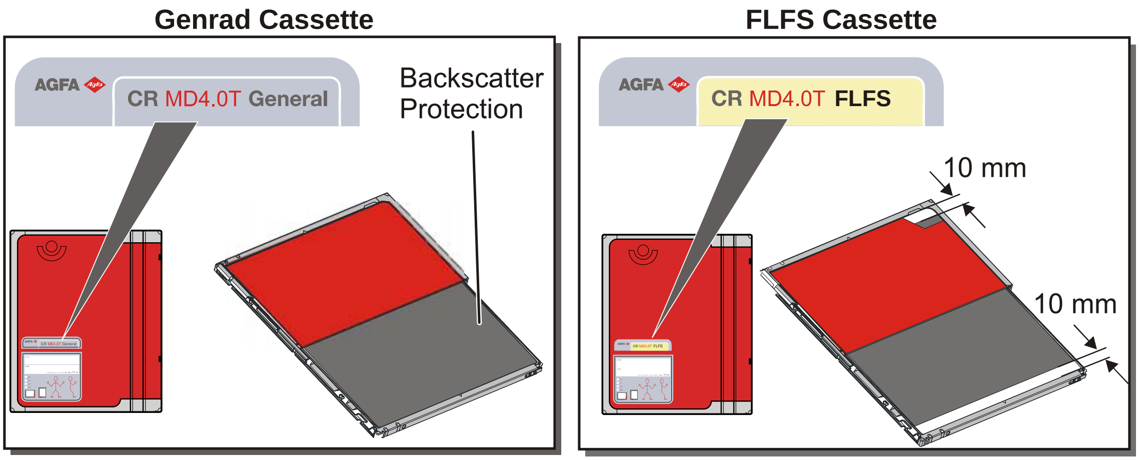


Figure 45

(1) Put 2 cassettes underneath the FLFS cassette when using a FLFS cassette for shading calibration.

✓ NOTE:

This covers the area where the cassette has no backscatter protection. Only this area has to be covered, which is used by the digitizer to determine the shading calibration curves.

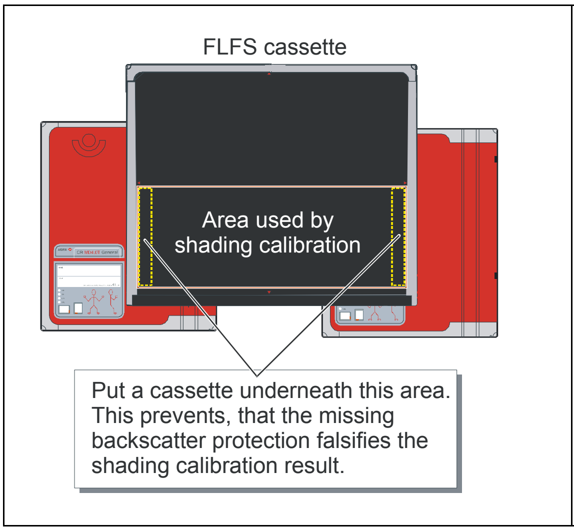

FLFS cassette
Area used by shading calibration
Put a cassette underneath this area. This prevents, that the missing backscatter protection falsifies the shading calibration result.

Figure 46: Exposure 1

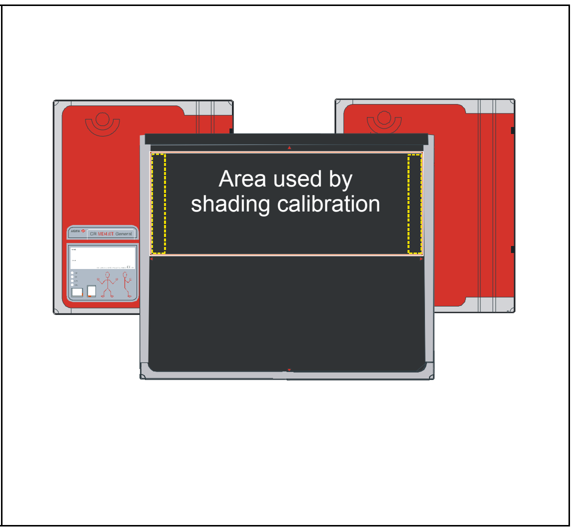

Area used by shading calibration

Figure 47: Exposure 2

(2) Erase the two cassettes which were put underneath the FLFS cassette during exposure.

(3) Observe IMPORTANT note below when evaluating the flatfield (Evaluating the flatfield is described in section 3.1.1).

IMPORTANT:

When using a FLFS cassette for flatfield exposure, the image will be slightly darker in the upper and lower image area where the backscatter protection is removed (approximately 1 cm each). These darker zones also have to be used for image quality evaluation in slow scan and fast scan direction to verify a successful shading calibration.

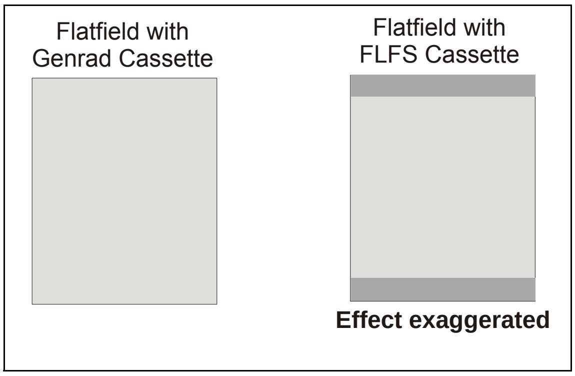

Flatfield with Genrad Cassette
Flatfield with FLFS Cassette
Effect exaggerated

Figure 48

3.2 Stall Calibration

Purpose

The stall calibration determines the optimum motor current for stall detection:
The motor drives several times to its home and end position with different motor currents. The mean value of these different motor currents is used as motor control current, where the steps of the motor are in the specified, allowed range.

It compensates the differences (e.g. friction; motor controller) of an assembly in series production.

Use Case

Perform a stall calibration in following cases:

- After replacement of a motor or mechanical assembly where a motor with stall detection is built in
- After replacement of the IP handling board (as this has the motor controllers built in)
- During preventive maintenance

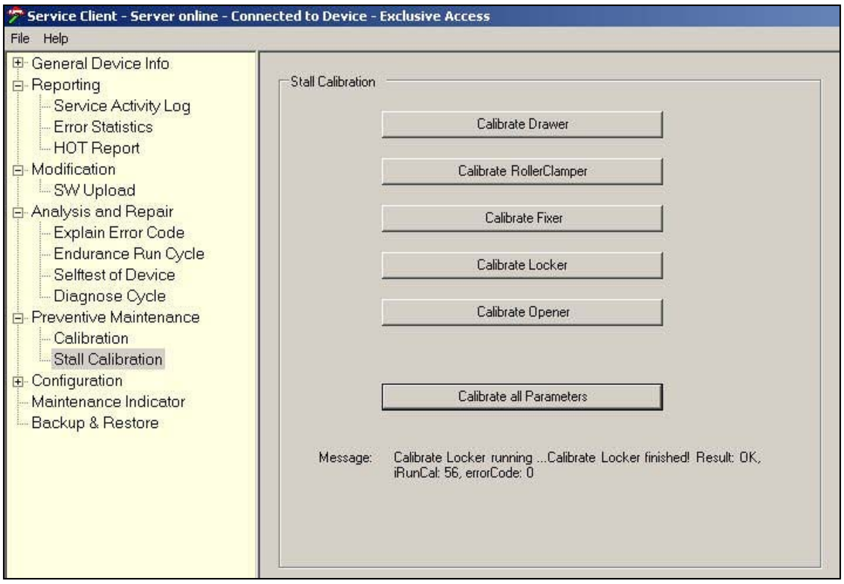
REQUIRED TOOLS:
CR 30-X service client on processing station

REQUIRED TIME:
Approximately 1 minute per stall calibration

(1) Start the CR 30-X Service Client.
(2) Enter username and password.
(3) Select "Preventive Maintenance - Stall Calibration".
(4) Select the required stall calibration.
(5) Wait till the stall calibration is finished: Takes approximately 1 minute.
(6) For software < CRE_13XX: Switch off/on the digitizer.

Result

The stall calibration is successfully performed.


Service Client - Server online - Connected to Device - Exclusive Access
File Help
General Device Info
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
SW Upload
Analysis and Repair
Explain Error Code
Endurance Run Cycle
Selftest of Device
Diagnose Cycle
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Maintenance Indicator
Backup & Restore
Stall Calibration
Calibrate Drawer
Calibrate RollerClamper
Calibrate Fixer
Calibrate Locker
Calibrate Opener
Calibrate all Parameters

Message: Calibrate Locker running ...Calibrate Locker finished! Result: OK, iRunCal: 56, errorCode: 0

Figure 49: Example screenshot

NOTE:
The stall calibration does not harm - it can be performed anytime. It is required however only in the cases as described previous page.

Chapter 3.7

Chapter 3.7, Software Menus, Settings is intentionally left blank.

The digitizer CR30-X does not have device specific settings which may be altered by the service engineer.

All settings are either determined in production and stored in E-Lables in the corresponding module, or - at replacement of parts - have to be determined again by an adjustment routine. These new values are automatically written to the corresponding E-Label.

Document No: DD+DIS150.06E

CR 30-X

Type 5175/100/105/110/120/125

► Purpose of this Document

This document lists all customer released software versions with their features, limitations and known problems.

► Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.4:
1.5	07-2011	Added software versions CRE_1907. See section 14.

► Referenced Documents

Document	Title
DD+DIS103.11E	Service Bulletin No. 48: Software CRE_1907 available

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

- Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.
- Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

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1 Software Release CRE_1010A

Type of new Software	1st customer release
Release Date	09/2006
Digitizer SNs	≥ 1001
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	None
Reference Document	DD+DIS365.06E, Service Bulletin No. 01, CR 30-X System released for Sales (Intranet Link / Extranet Link)

1.1 Supported Functions

All functions as specified:

- Open the inserted cassette (15 x 30 cm; 18 x 24 cm; 24 x 30 cm; 35 x 43 cm) and transport the IP to the Scan Unit.
- Acquire the ID data via fast ID mode from the processing station.
- Scan (= stimulate and scan) the image on the IP.
- Send the raw image to the processing station.
- Erase the IP.
- Put the IP back in its cassette, close cassette.
- Update ID data on IP (cycle counter).

1.2 Limitations

Shading calibration curves are stored at the processing station only. This means, if a digitizer is operated with another processing station without restore, its shading calibration is lost.

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2 Software Patch CRE_1206 with Patch CRE_1206A

Type of new Software	Software Upgrade
Release Date	11/2006
Digitizer SNs	≥ 1021
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	None
Reference Document	DD+DIS381.06E, Service Bulletin No. 02, CR30-X Software CRE_1206 with Patch CRE_1206A released (Intranet Link / Extranet Link)

2.1 Solved Bugs with Software CRE_1206A compared to CRE_1010A

- CR30-X related user messages and warnings at the NX workstation are displayed now in the language as specified in the NX user account.
- Solved several items which led to lost communication CR30-X - NX workstation.

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3 Software Patch CRE_1206C

Type of new Software	Software Upgrade
Release Date	01/2007
Digitizer SNs	≥ 1021
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1206 has to be installed before installing the software patch CRE_1206C.
Reference Document	DD+DIS001.07E, Service Bulletin No. 05, Displayed LgM-Values too high: Install Software Patch CRE_1206C (Intranet Link / Extranet Link)

3.1 Solved Bugs with Software CRE_1206C compared to CRE_1206A

Solved wrong image plate sensitivity which was sent from the digitizer to the NX workstation resulting in too high displayed lgM-values.

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4 Software Patch CRE_1206D

Type of new Software	Software Update
Release Date	02/2007
Digitizer SNs	≥ 1366 plus 1187, 1260, 1261, 1263, 1338, 1355, 1357, 1363
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1206 has to be installed before installing the software patch CRE_1206D.
Reference Document	DD+DIS027.07E, Service Bulletin No. 06, Interfering Noise in the Image: Install Software Patch CRE_1206D (obsolete Document)

4.1 Solved Bugs with Software CRE_1206D compared to CRE_1206C

Solved insufficient initialization of the RAM on the PMI board, what caused interfering noise in the image.

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5 Software Release CRE_1309

Type of new Software	Software Upgrade
Release Date	05/2007
Digitizer SNs	≥ 1816 plus 1668, 1679, 1692, 1721, 1726, 1730, 1731, 1745, 1750, 1753, 1770, 1779, 1780, 1786, 1790, 1793, 1795, 1799, 1800, 1802, 1804, 1809, 1812, 1813, 1814
Availability	• Part of service kit CM+9 5175 9130 0 (See CR 30-X Service Bulletin No. 12 • On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	None
Reference Document	• DD+DIS148.07E, Service Bulletin No. 12, Service Kit CM+9 5175 9130 0 available to solve various Problems • DD+DIS158.07E, Service Bulletin No. 13, Software CRE_1309 available on MEDNET

5.1 New Features and Improvements of Software CRE_1309

- Improved, more reliable IP handling
- Improved stability of image quality to prevent "puzzled images" caused by electrostatic discharge (additional to the mechanical changes in the digitizer which were introduced with the mechanical service kit)
- Improved communication synchronization between digitizer and control PC
- Improved user messages

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6 Software Patch CRE_1309A

Type of new Software	Software Update
Release Date	08/2007
Digitizer SNs	≥ 2292 (+ 2268)
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1309 has to be installed before installing the software patch CRE_1309A
Reference Document	DD+DIS304.07E, Service Bulletin No. 18, Sporadic Errors 10754, 10761, or 107 67 with SW CRE_1309: Install Patch CRE_1309A (Intranet Link / Extranet Link)

6.1 Solved Bugs with Software CRE_1309A compared to CRE_1309

Solved sporadic error codes 10754, 10761 or 10767 that may be displayed during boot-up or just before scanning. This fault mainly happened with machines that have been upgraded from software CRE_1206X to CRE_1309 in the field.

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7 Software Release CRE_1405

Type of new Software	Software Upgrade
Release Date	11/2007
Digitizer SNs	5175/100 SN ≥ 2730 and type 5175/110 SN ≥ 6001
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1405 has only been tested with processing station software NX 2.0.6805 SU1. It is mandatory to make a software upgrade to NX 2.0.6805 SU1 (or higher version), too, if not yet done.
Reference Document	DD+DIS329.07E, Service Bulletin No. 20, Software CRE_1405 released to support FLFSCassette and “White Label Digitizer” (Intranet Link / Extranet Link)

7.1 New Features of Software CRE_1405

- Improved Full Leg / Full Spine (FLFS) functionality by
  - overscan of image plates that are used in FLFS cassettes
  - support of dedicated 35x43 cm FLFS cassettes. These cassettes have approx. 10 mm of back-scatter protection removed to allow overlapping of cassettes.
- With software CRE_1405 a new digitizer with sub-type 5175/110 is released. Functional difference: Reduced throughput for 35x43 cm cassettes from 70 IPs/h (Type 5175/100) to 50 IPs/h (Type 5175/110). This digitizer is a “white label” device without any indication of brand or name.

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7.2 Solved Bugs with Software CRE_1405 compared to CRE_1309A

Software CRE_1405 contains following bug-fixes:

- In some cases after software upgrade to CRE_1309 or exchange of the slow scan board the digitizer stops scanning when the first image plate enters the scan unit, due to a corrupted slow scan E-Label. In software CRE_1405 a mechanism is implemented which is able to handle wrong information in E-labels.
- At acceptance test execution the sensitivity test (75 kV, 1.5mm Cu, 2x 10 myGy) yields more than 2000 SAL. Expected: 1800 SAL. In software CRE_1405 the reference between IP code and sensitivity is optimized.
- CR 30-X Service Client Function "Diagnose Cycle" can be executed, it stays however with screen "Loading ESF". It is not possible to check any function by the diagnose cycle. In software CRE_1405 the missing functionality is implemented to start the diagnose cycle successfully.

8 Software Release CRE_1509

Type of new Software	Software Upgrade
Release Date	04/2008
Digitizer SNs	5175/100 SN ≥ 3626 and type 5175/110 SN ≥ 6132
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1509 has only been released with processing station software NX 2.0.6805 SU1 and SU2. Together with software upgrade CRE_1509 it is mandatory to upgrade to NX 2.0.6805 SU1 or SU2, too, if not yet done earlier.
Reference Document	DD+DIS063.08E, Service Bulletin No. 23, Software CRE_1509 released to support new PMI2 Boards (Intranet Link / Extranet Link)

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8.1 New Features of Software CRE_1509

8.1.1 New features for the Customer

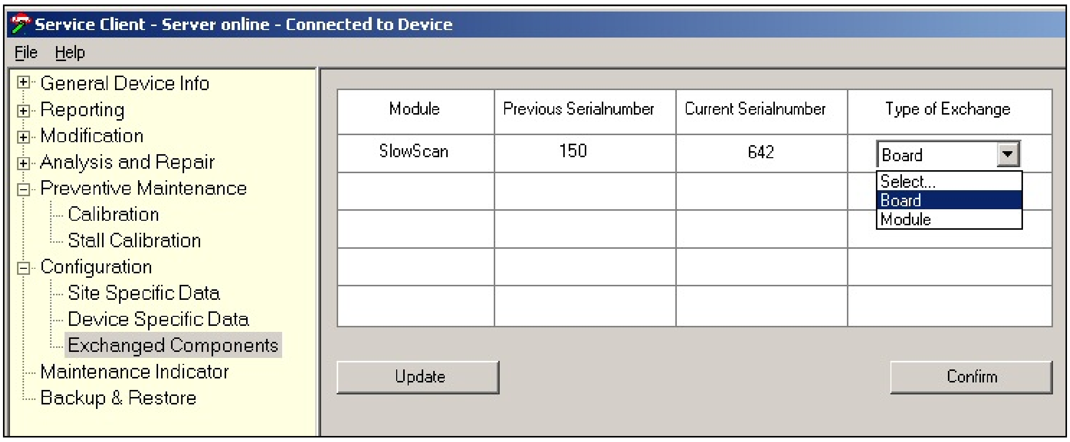
- Some minor improvements in IP handling and communication between digitizer and NX processing station. Details see section 8.2.4.

8.1.2 New features for Service

- Software CRE_1509 supports both, the existing PMI board CM+9 5175 2290 0* and the new developed PMI2 board CM+9 5175 2180 0 (which is not compatible to software < CRE_1509).

  * The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.
- Result of stall calibration is shown in stall calibration user interface as well as stored in the service activity log file. This result can also be used for troubleshooting. For details refer to section 3.2, Tools.
- Software CRE_1509 displays error 4642 after replacement of a spare part with E-label (i.e. each spare part which keeps spare part specific data):
  This error can only be solved in service client menu “Configuration – Exchanged Components”. There you have to enter, whether the spare part is a complete module, or whether it is a printed circuit board only.

  Example:
  - For replacement of slow scan board select “Board”.
  - For replacement of “slow scan unit” (incl. slow scan board) select “Module”.
  This new feature was required due to logistical reasons. For details refer to Technical Documentation, chapter 3.2, Tools.


Service Client - Server online - Connected to Device
File
Help
General Device Info
Reporting
Modification
Analysis and Repair
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Site Specific Data
Device Specific Data
Exchanged Components
Maintenance Indicator
Backup & Restore
Select...
Board
Module
Update
Confirm

Module	Previous Serialnumber	Current Serialnumber	Type of Exchange
SlowScan	150	642	Board

Figure 1

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✓ NOTE:

All modules with E-labels have installation instructions enclosed, which describe the correct proceeding.

8.2 Solved Bugs with Software CRE_1509 compared to CRE_1405

Software CRE_1509 contains following bug-fixes:

8.2.1 Misleading Error Messages in the Logfiles (HQ_0702280001)

Symptom Digitizer logfiles contains misleading, obsolete error messages

Defect Software problem

Solution Problem fixed in software CRE_1509

8.2.2 Missing automatic E-Label data Synchronization after Replacements (HQ_0704270003)

Symptom 1 After replacement of an IP Handling Board (CM+9 5175 5230 X) it is possible that after insertion of the cassette, during cassette clamping error 4152 pops up "Cassette fixer detected unknown format".

Symptom 2 After replacement of a Slow Scan Board (CM+9 5175 2120 X) it is possible that the aspect ratio of the scanned image is not exactly 1:1 anymore, but e.g. 1:0,99 or 1:1,01.

IMPORTANT:

Both symptoms only appear, if both of following conditions are fulfilled:

- The digitizer at the production site which is used for board testing and the digitizer on site, where the new boards are built in, deviate a lot in mechanical tolerances concerning cassette clamping or the slow scan gear box.
- The NX processing station is always switched on.

Defect Missing automatic E-Label data synchronization between control PC (= NX processing station) and digitizer for the IP handling board and slow scan board.

The E-label synchronization is falsely initiated by a reset of the control PC only .

Solution Automatic E-label synchronization with switch on of the digitizer implemented in software CRE_1509.

✓ NOTE:

A workaround for this symptom was already published with digitizer SB 15, DD+DIS241.07E.

8.2.3 After software Upgrade Image Plate transport stops before Scan Unit due to corrupted Slow Scan Board E-Label (HQ_0708220004)

Symptom In some cases after software upgrade to CRE_1309 or exchange of the slow scan board the digitizer stops scanning when the first image plate enters the scan unit, due to a corrupted slow scan E-Label:

In this case the digitizer waits for information which is normally stored in the E-label.

No error message is issued. The digitizer boots-up properly, as the corrupted slow scan board e-label parameters are not used during boot-up. With a reset the image plate is returned in the cassette. Scanning the next image plate gives the same result.

Defect Software problem: Slowscan eLabel entry "SpeedFactor" is not stored in parameter database on control PC.

Solution In software CRE_1509 parameter “SpeedFactor” is correctly stored in parameter database on control PC.

✓ NOTE:

A preliminary solution for this symptom was already published with digitizer SB 20, DD+DIS329.07E.

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8.2.4 Additional, minor Bug Fixes

Following a list of minor software bugs that appeared at internal tests and are solved with CRE_1509:

Solved Service Function related Software Bugs:

- In some cases, when working with the Service Client, the error viewer was not visible, if an error occurred (e.g. in diagnose cycle). To solve the problem in the worst case a reset of the control PC was required. In SW ≥ 1509 always the error viewer is visible if an error occurs while working with the service client.
- Total number of cycles of the product was not written to the E-label and the infocounter.
- Warnings were not stored in infocounter “error history”.
- Stall Calibration details were not logged in Service Activity Log file
- After software installation the message “SW upload required appeared.
- It was not possible to perform the stall calibration remotely.
- In some cases the service client could not re-establish communication after software upload. It was required to reboot the control PC.
- Retries during IP handling are not logged in the infocounter.
- Software upload gave (false) error 15399.
- Error messages were not displayed when performing a diagnose cycle.

Solved Error Handling Software Bugs:

- In case of a Photomultiplier defect the digitizer software crashed: No error was displayed.
- If the digitizer had problems writing to the cassette chip, not only NX message “119: The file could not be saved” appeared, but also a false error message “Problem during scan: The image may not have the required quality”.
- If FireWire communication was interrupted during scan, communication could only be re-established by a reset of both, digitizer and control PC.
- During boot-up the stepper motors did not retry to go to home position if a problem occurred. Now three retries are performed.
- An aging photomultiplier could not be detected.
- Retry sequence of cassette opener did not work, if cassette cover was mechanically blocked.
- Some timeouts during scan were not transferred to the control PC, e.g. if “scan command” did not return a response.

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Solved Image Faults:

- In software CRE_1405 it was possible that regular, bright, wide stripes in fast scan direction appeared, if first a 35x43 cm Genrad scan followed by a 35x43 cm FLFS (Full leg / full spine) scan a was performed.

8.3 Open Issues

In software CRE_1509 it is erroneously possible to perform the service function “Diagnose Cycle” and “Endurance Run” remotely. In previous software versions these two functions were blocked for service connections via “remote desktop”.

CAUTION:

A local service engineer may work at the device while a remote service engineer executes a “Diagnose Cycle”: Risk of injury.

Do not execute service function “Diagnose Cycle” via “Remote Desktop” connection.

9 Software Release CRE_1511

Type of new Software	Software Upgrade
Release Date	07/2009
Digitizer SNs	5175/100 SN ≥ 5570 and type 5175/110 SN ≥ 6377
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1511 has only been released with processing station software NX 2.0.6805 SU1 and SU2. Together with software upgrade CRE_1511 it is mandatory to upgrade to NX 2.0.6805 SU1 or SU2, too, if not yet done earlier.
Reference Document	DD+DIS131.09E, Service Bulletin No. 28, Laser Beam Detection Toolkit CM+9 5175 2940 0 and FireWire Connector Shield CM+9 5175 1081 0 available (Intranet Link / Extranet Link)

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9.1 New Features of Software CRE_1511

Software CRE_1511 supports the new service client function "Check laser beam position". This function is required for the Laser Beam Detection Toolkit, spare part number*: CM+9 5175 2940 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

10 Software Release CRE_1607

Type of new Software	Software Upgrade
Release Date	11/2009
Digitizer SNs	5175/100 SN ≥ 8373 and type 5175/110 SN ≥ 6482
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1607 has only been released with processing station software NX 2.0.6805 SU1 and SU2. Together with software upgrade CRE_1511 it is mandatory to upgrade to NX 2.0.6805 SU1 or SU2, too, if not yet done earlier.
Reference Document	DD+DIS287.09E, Service Bulletin No. 30, Software CRE_1607 available (obsolete document)

✓ NOTE:

Software CRE_1607 was available on MedNet only a few days. Soon after release it was superseeded by software CRE_1607A. See next section for details.

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11 Software Release CRE_1607A

Type of new Software	Software Upgrade
Release Date	12/2009
Digitizer SNs	5175/100 SN ≥ 8460 and SN ≥ 10016 (Type 5175/100 “Speed Class free”) 5175/110 SN ≥ 6560 and SN ≥ 20001 (Type 5175/110 “Speed Class free”)
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1607A has only been released with processing station software NX 2.0.6805 SU1 and SU2. Together with software upgrade CRE_1607A it is mandatory to upgrade to NX 2.0.6805 SU1 or SU2, too, if not yet done earlier.
Reference Document	DD+DIS333.09E, Service Bulletin No. 32, Software CRE_1607A available (Intranet Link / Extranet Link)

11.1 New Features of Software CRE_1607A

Software CRE_1607A contains following new features:

- "Speed class free" (SCF) operation combined with automatic erasure dose detection: This feature simplifies configuration work at the NX workstation to adapt the system to the customer needs.
- Improved error message descriptions for the ten most frequent error messages (HQ_0902090001)
- Implemented an improved test algorithm to detect a defective laser diode (Error 14855): This helps troubleshooting when no laser beam is detected by the calibration board.
- Improved algorithm for stall calibration for all related drives (HQ_0811250003).
- Maintenance indicator can be configured to appear after a number of cycles or a certain time frame. Before it was fixed (when activated) to appear after 12.000 cycles or one year.

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11.2 Solved Bugs with Software CRE_1607 compared to CRE_1509 or CRE_1511

11.2.1 Sporadic Banding Line after 210 mm from Begin of Scan (HQ_0803100001)

Symptom

Sporadic banding line approximately 210 mm after begin of scan:

The problem is independent of the image plate size. The banding line may only be visible in a flatfield, not in a clinical image.

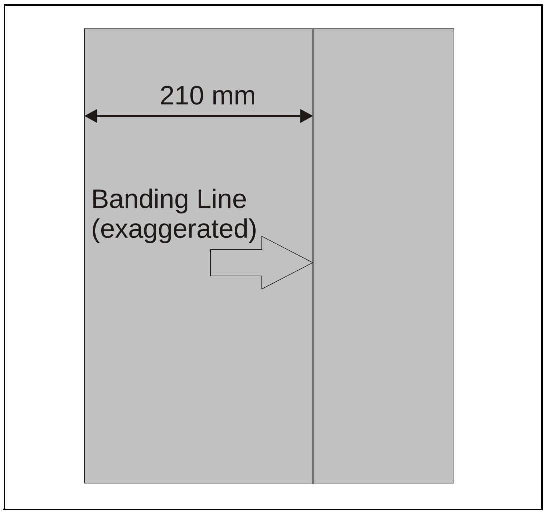

Figure 2

Cause

Slightly different rotation speeds of the pre- and postscan rollers can cause a minimal tension between the image plate and the rollers which may be released suddenly when the pre-scan rollers opens.

Solution

In software CRE_1607A the timing to open the prescan rollers was adapted to guarantee a tension free transport of the image plate.

11.2.2 After Board Exchange the Digitizer boots up with an Error Message indicating a Board Failure (HQ_0804030005, HQ_0808010001 and HQ_0803170002)

Symptom

After exchange of a defective printed circuit board the digitizer boots up with an error message indicating a board or E-Label failure, e.g. 14857 (Error initializing optics eLabel).

Cause

E-Label data wrong due to corrupted E-label data or wrong service actions.

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Solution **If software CRE_1607A is installed:**

In Software CRE_1607 the digitizer is automatically registered when it gets connected to the control PC. It is not required anymore to register the digitizer in service client menu "Configuration - Site specific Data" during installation.

In addition, the digitizer detects in most cases automatically, whether a board or a module was exchanged: Error message 4642 ("A new module serial number has been detected") will only appear in exceptional cases.

Solution **If software CRE_1607A is not installed yet:**

If the problem appears at a digitizer with software < CRE_1607, a software upgrade in the error situation will solve most problems if digitizer was registered during the installation procedure: In software CRE_1607 an algorithm is implemented to repair corrupted e-labels.

11.2.3 Error 12800 after Switch-on of the Digitizer (HQ_0901140001)

Symptom Error 12800 ("Procedure selftest of Clamper terminated with failure") during or after boot up of the Digitizer. The fault can be sporadic or persistent.

Cause Control parameter of the roller clamper drive (motor M6) test does not match in some cases with certain design parameter of the roller clamper drive.

Solution Improved selftest routine during boot up in the software CRE_1607A

11.2.4 Additional, minor Bug Fixes

The following lists minor software issues, which have been solved with CRE_1607A:

- The sporadic error 10752 at boot-up is solved by a time delay to test light incidence.
- The menu ‘Diagnose Cycle’ in the service client cannot be accessed anymore remotely in software CRE_1607A.
- No user message was displayed, if the FireWire link to the control PC was interrupted during the start of scan and after return to the cassette.
  Now software CRE_1607A shows a message and asks the user to check, whether the image plate was proper scanned and erased.
- Sporadic error 2595 (Image transmission failed. System is retrying. If image does not appear, please restart the PC) despite of successful image transmission.

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- The re-transmission of image data failed with “Error 2623” or “Error 2595” when the connection to the control PC was established again. This happended, when the FireWire link to the control PC was interrupted and again re-connected.
- If the FireWire link to the control PC was interrupted during the image transfer, the communication between Digitizer and control PC was not established automatically after re-connection of the FireWire link.
- When the cassette was not identified before scanning (warning with error 3138), the identification on the control PC fails with the error 3096. With software CRE_1607A the cassette identification on the control PC is now successful.
- Errors that appeared in the service client menu "Diagnose Cycle" were correct displayed only, if the error viewer was restarted.
- Software CRE_1607A supports now device serial numbers with 5 digits e.g. SN10194.

11.3 Solved Bug in Software CRE_1607A compared to Software CRE_1607

Symptom

Digitizer sporadically does not boot-up (HQ_0911270003): After switch-on it stays red blinking without starting the selftest of motors and sensors. Another switch off/on may resolve the problem.

Only a few digitizers are affected. At these digitizers the symptom may appear more frequent.

Cause

Software issue in CRE_1607: The timing during boot-up does not match with certain hardware parameters of some PMI boards.

Solution

In software CRE_1607A the timing for the boot up of the PMI board is adapted.

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12 Software Release CRE_1703

Type of new Software	Software Upgrade
Release Date	03/2010
Digitizer SNs	5175/100 SN ≥ 30.000 5175/110 SN ≥ 40.000
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1703 has only been released with processing station software NX 2.0.6805 SU1 and SU2. Together with software upgrade CRE_1703 it is mandatory to upgrade to NX 2.0.6805 SU1 or SU2, too, if not yet done earlier.
Reference Document	DD+DIS068.10E, Service Bulletin No. 38, Software CRE_1703 available (Intranet Link / Extranet Link)

12.1 New Features of Software CRE_1703

- Support of cassette format 35 x 35 cm for digitizers as of SN 30.000 (Type 5175/100) and SN 40.000 (Type 5175/110).

✓ NOTE:

To be able to clearly determine whether a digitizer supports cassette format 35 x 35 cm, the serial numbers for digitizers with this feature start with SN 30.000 (Type 5175/100) and SN 40.000 (Type 5175/110).

It is not possible to modify a digitizer below SN 30.000 (Type 5175/100) and SN 40.000 (Type 5175/110) to accept 35 x 35 cm cassettes.

See Service Bulletin No. 39, Digitizer supports 35 x 35 cm Cassettes.

- Support of new version of Optic Module, which is planned to be introduced in Q II / 2010
- Improved error messages

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13 Software Release CRE_1901

Type of new Software	Software Upgrade
Release Date	12/2010
Digitizer SNs	Type 5175/100 SN ≥ 31.684, additionally in SN 31.680 Type 5175/105 SN ≥ 39.001 Type 5175/110 SN ≥ 40.342 Type 5175/120 SN ≥ 41.001 Type 5175/125 SN ≥ 43.001
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1901 has only been released with processing station software NX 2.0.6805 SU1 and SU2. Together with software upgrade CRE_1901 it is mandatory to upgrade to NX 2.0.6805 SU1 or SU2, too, if not yet done earlier.
Reference Document	DD+DIS308.10E, Service Bulletin No. 44, Software CRE_1901 and new Digitizer Subtypes available (Intranet Link / Extranet Link)

13.1 New Features of Software CRE_1901

- Support of new digitizers sub types 105, 120 and 125 with different throughput values for different markets. For details refer to service documentation chapter 11, Installation Planning.
- The Service Client can be installed on Windows 7, 32 bit systems additionally to Windows XP SP2
- Improved service functionalities:
    - The serial number of modules is not displayed anymore in the service client menu “Exchanged components”.
      Reason: Some modules have the correct serial number “0”, what was interpreted as a wrong serial number display.
    - Improved stall calibration

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13.2 Solved Bugs with Software CRE_1901 compared to CRE_1703A

- Service Activity Log now contains the info about installation date, time and software version.
- For Error 10760 the user text is now displayed.

14 Software Release CRE_1907

Type of new Software	Software Upgrade
Release Date	06/2011
Digitizer SNs	• Type 5175/100 SN ≥ 33025 plus 32867, 32868, 32870, 32878, 32881, 32889, 32897, 32902, 32904, 32907, 32910, 32912, 32915, 32918, 32920, 32921, 32925, 32928, 32932, 32933, 32934, 32935, 32938, 32939, 32942, 32948, 32950, 32952, 32953, 32954, 32956, 32958, 32960, 32961, 32963, 32966, 32967, 32969, 32971, 32974, 32978, 32981, 32983, 32988, 32989, 32990, 32992, 32993, 32995, 32997, 32998, 33000, 33001, 33003, 33004, 33005, 33007, 33008, 33009, 33012, 33013, 33017, 33020, 33021 • Type 5175/105 SN ≥ 39033 • Type 5175/120 SN ≥ 41137 • Type 5175/125 SN ≥ 43097
Availability	On the Agfa HealthCare Library always the latest available software release can be downloaded.
Prerequisites	Software CRE_1907 has only been released with processing station software NX 2.0.6805 SU1 and SU2. Together with software upgrade CRE_1901 it is mandatory to upgrade to NX 2.0.6805 SU1 or SU2, too, if not yet done earlier.
Reference Document	DD+DIS103.11E, Service Bulletin No. 48, Software CRE_1907 available (Intranet Link / Extranet Link)

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14.1 New Features of Software CRE_1907

Software CRE_1907 contains no new features compared to CRE_1901.

14.2 Solved Bugs with Software CRE_1907 compared to CRE_1901

14.2.1 Minimizing the Error Viewer fails in some Cases

Symptom	If the Error Viewer is minimized by pressing the "-" button in the title bar of the Error Viewer, it doesn't jump into the Windows taskbar. It only closes the application window and remains visible on the desktop with its title bar.
Cause	Different performance of the minimize functionality in specific Windows configurations.
Solution	Removed the “minimize” functionality. The close button is still available which minimizes the Error Viewer to the taskbar.

14.2.2 Sporadic Failure of Slow Scan Motor Selftest with Error 13312

Symptom	Sporadic error 13312 (Slowscan selftest failed) at boot-up.
Cause	The test of the currents of the Slow Scan Motor at no-load fails sporadically.
Solution	Improved test algorithms.

14.2.3 Error 6169 with suboptimal Error Description

Symptom	The error description for error 6169 (End of IP not detected) was suboptimal.
Cause	Error description not reworked yet.
Solution	Improved error description in software CRE_1907 about possible root causes and remedies for error 6169.

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14.2.4 Improvements that are applicable for certain Dealer Configurations only

14.2.4.1 Sporadic Error 3192 when closing a TWAIN session

Symptom	Sporadically error 3192 is displayed when a TWAIN session is closed. Note, that it is not applicable for NX software.
Cause	Synchronization problem of different software tasks.
Solution	Adapted timings to prevent the synchronization problem.

14.2.4.2 Polygon and Photomultiplier High Tension are not switched off when canceling the Scan Cycle

Symptom	When a cassette is ejected without scan, neither the polygon nor the photomultiplier high voltage are switched off. Note, that it is not possible to eject the cassette without scan with NX software.
Cause	Functionality not foreseen yet.
Solution	Adapted software to switch off polygon and photomultiplier high voltage when scanning is cancelled.

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HEALTHCARE
Imaging Services

Chapter 3.9

Repair and Service

FAQ - Frequently Asked Questions

Document No: DD+DIS150.06E

CR 30-X

Type 5175 / 100/110

► Please note

The Chapter ‘FAQ’, Edition 1, Revision 0, has been replaced by the separately available Troubleshooting Guide, DD+DIS151.08E

Please download the Troubleshooting Guide from the GSO Library:

MEDNET GSO → Computed Radiography → CR Digitizers →
CR 30-X → Trouble shooting guide

Edition 1, Revision 1
07/2008 printed in Germany

Document Node ID: 12152421
eq_03-9_faq_e_template_v05

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List of Contents

1 Reference Diagrams 1

1.1 Sensors and Switches 1

1.2 Motors 1

1.3 Printed Circuit Boards 2

1.4 Connectors 2

Overview of Circuit Diagrams

General Schematics Sheet 1 to 9

1 Reference Diagrams

1.1 Sensors and Switches

Name	**Refer to**
Cassette Edge Sensor (S1)	Figure 3, page 5
Cassette Unit open Safety Switch (S2)	Figure 3, page 5
Main switch (S3)	Figure 3, page 5

1.2 Motors

Name	Refer to
Roller Clamping Stepper Motor (M6)	Figure 2, page 4
Drawer Stepper Motor (M4)	Figure 2, page 4
Fixer Stepper Motor (M1)	Figure 2, page 4
Locking Stepper Motor (M17)	Figure 2, page 4
Opener Stepper Motor (M3)	Figure 2, page 4
Roller Stepper Motor (M5)	Figure 2, page 4
Slow Scan Lift Stepper Motor (M8)	Figure 2, page 4
Slow Scan Stepper Motor (M9)	Figure 2, page 4

1.3 Printed Circuit Boards

Name	Refer to
Power Supply	Figure 3, page 5
IP Handling Board	Figure 1, page 3
Chip Reader	Figure 3, page 5
User Interface	Figure 1, page 3
PMI Power Distribution Board	Figure 1, page 3
PMI Board	Figure 1, page 3
Roller IP Sensor	Figure 3, page 5
Slow Scan Lift Position Sensor	Figure 3, page 5
Distributor Board	Figure 3, page 5
Calibration Board	Figure 3, page 5
Slow Scan Board	Figure 1, page 3
Erasure Unit	Figure 3, page 5
Roller IP Sensor	Figure 3, page 5

1.4 Connectors

Name	Refer to
Interconnector XK3	Figure 3, page 5

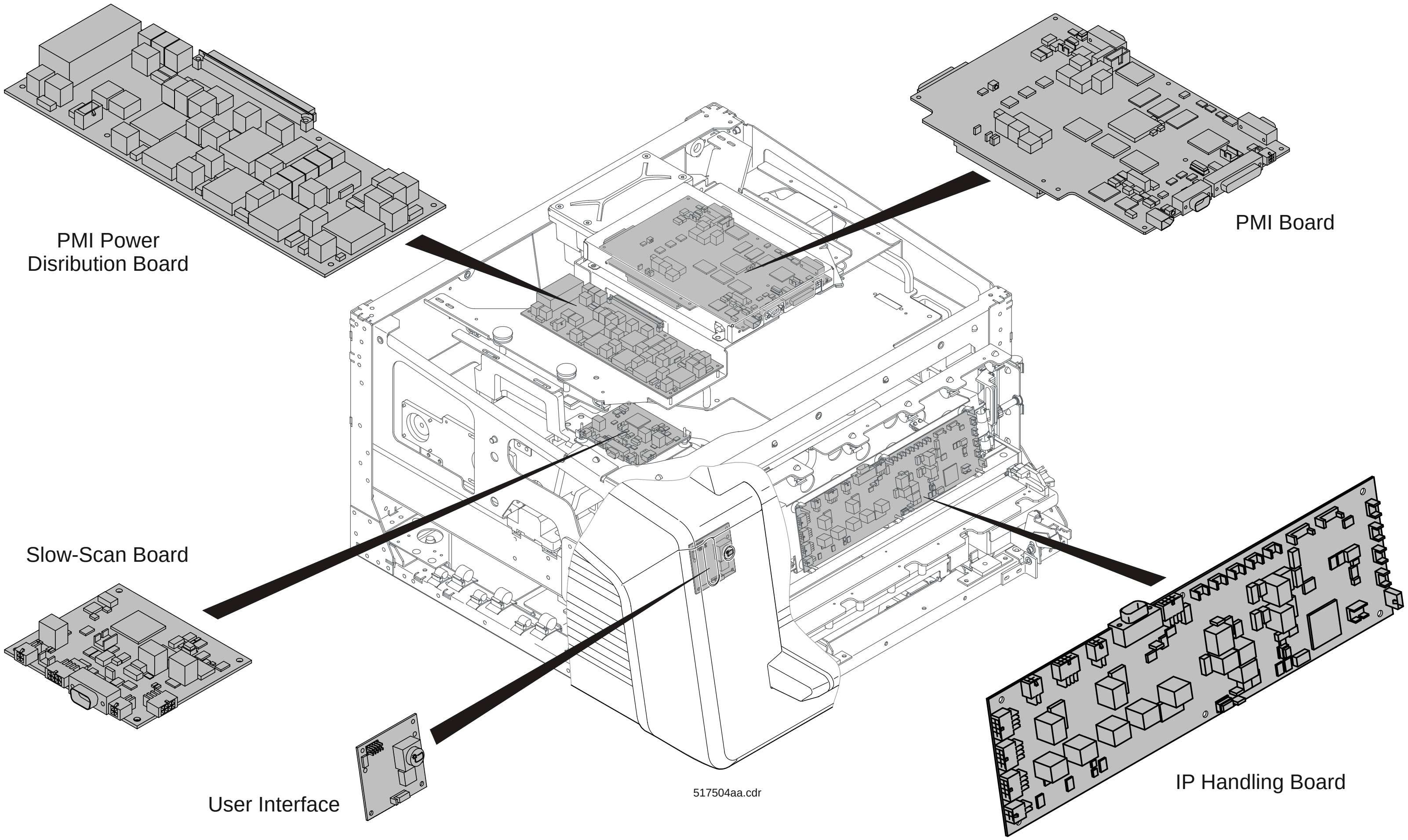

PMI Power
Disribution Board
PMI Board
Slow-Scan Board
User Interface
517504aa.cdr
IP Handling Board

Figure 1

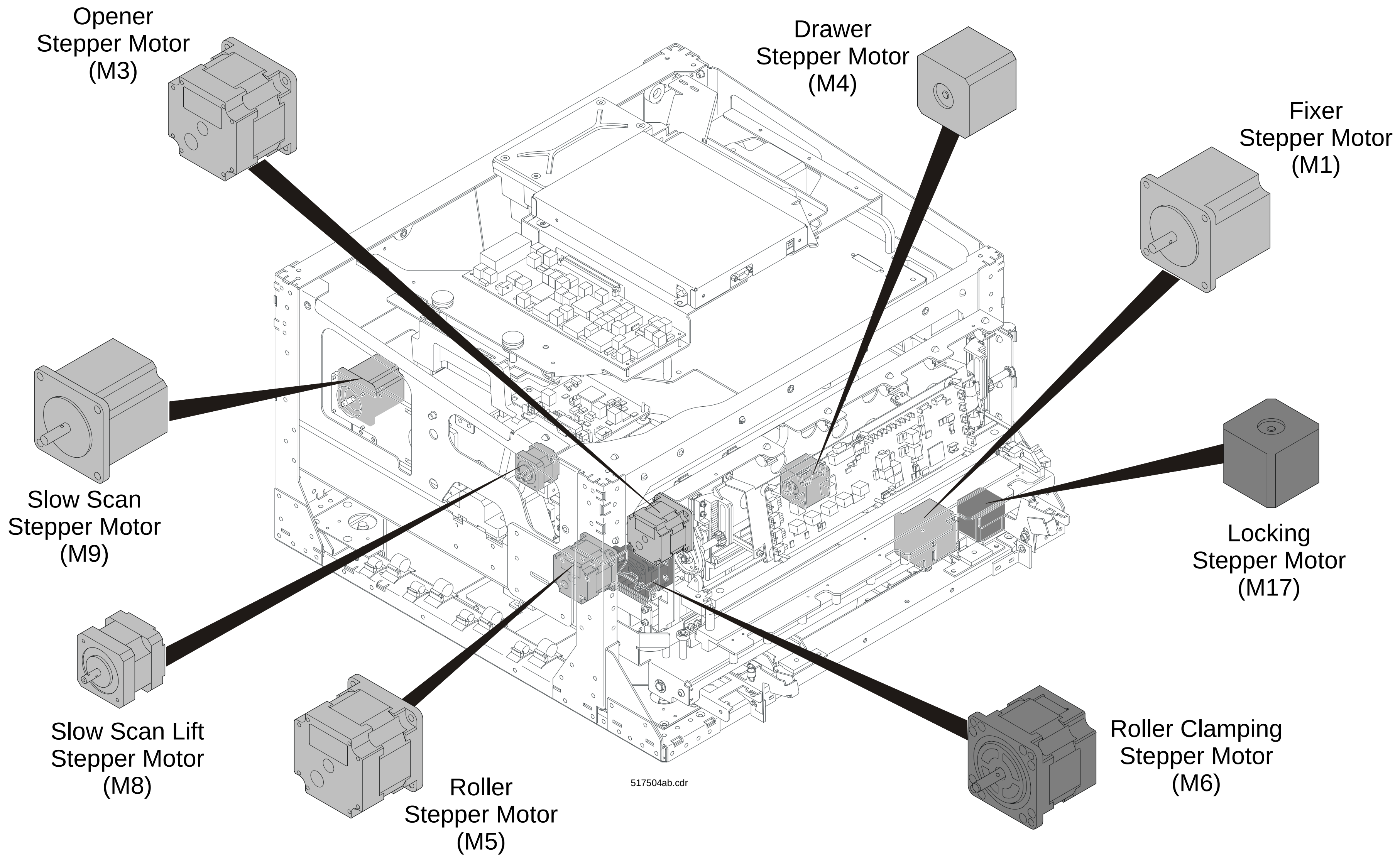

Opener
Stepper Motor
(M3)
Drawer
Stepper Motor
(M4)
Fixer
Stepper Motor
(M1)
Slow Scan
Stepper Motor
(M9)
Locking
Stepper Motor
(M17)
Slow Scan Lift
Stepper Motor
(M8)
Roller
Stepper Motor
(M5)
Roller Clamping
Stepper Motor
(M6)
517504ab.cdr

Figure 2

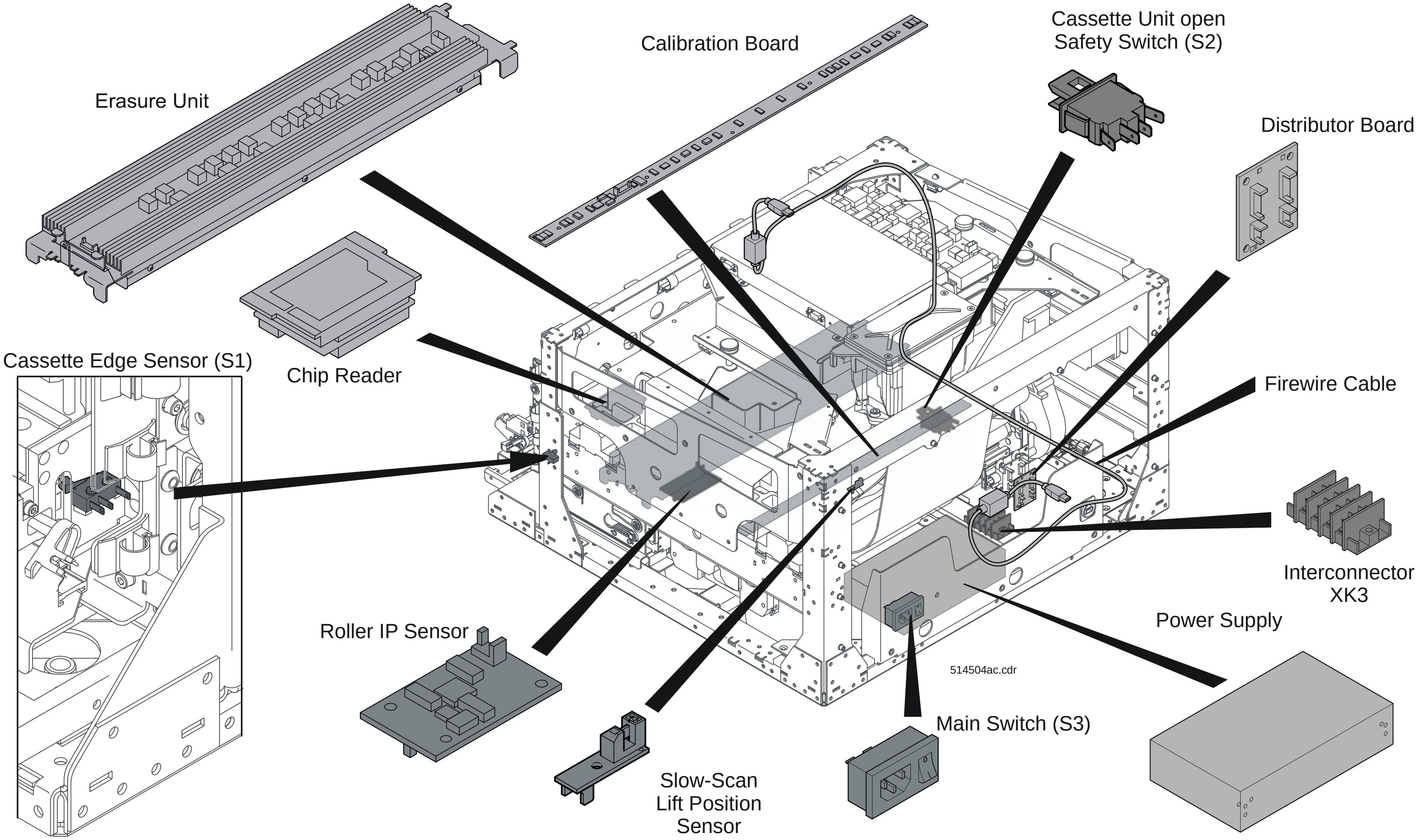
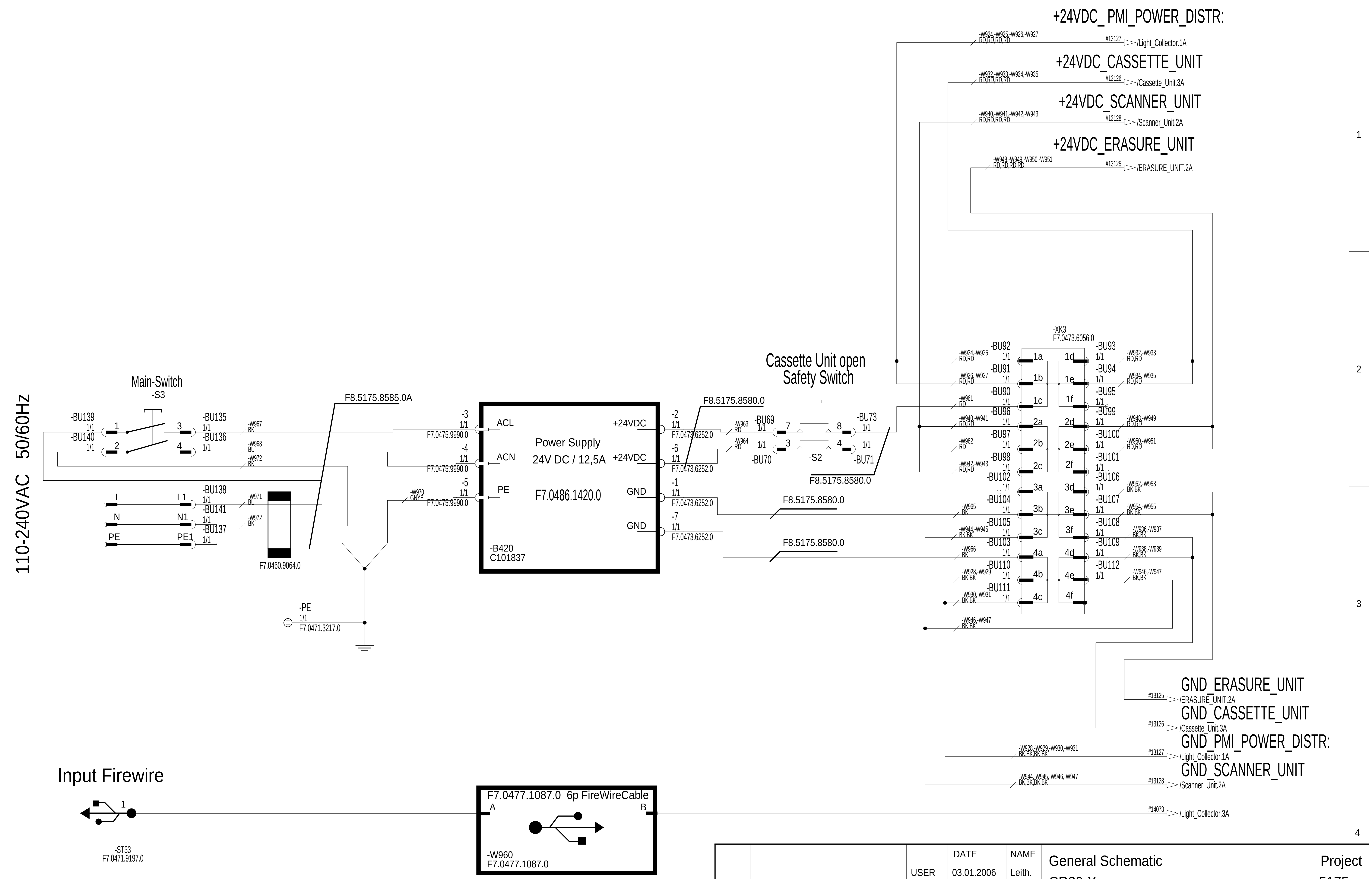

Calibration Board
Cassette Unit open
Safety Switch (S2)
Erasure Unit
Distributor Board
Cassette Edge Sensor (S1)
Chip Reader
Firewire Cable
Interconnector
XK3
Power Supply
Roller IP Sensor
514504ac.cdr
Main Switch (S3)
Slow-Scan
Lift Position
Sensor

Figure 3

2 General Circuit Diagrams

Overview of Circuit Diagrams

Designation	See page ...
Frame	Sheet 1 of 9
Cassette Unit	Sheet 2 of 9
Scan Modul	Sheet 3 of 9
Light Collector	Sheet 4 of 9
Scanner Unit	Sheet 5 of 9
Erasure Unit	Sheet 6 of 9
Wire Harness 5175.8510	Sheet 7 of 9
Wire Harness 5175.8580	Sheet 8 of 9
Wire Harness 5175.8585	Sheet 9 of 9


+24VDC_ PMI_POWER_DISTR:
-W924,-W925,-W926,-W927 RD,RD,RD,RD
#13127 /Light_Collector.1A
+24VDC_CASSETTE_UNIT
-W932,-W933,-W934,-W935 RD,RD,RD,RD
#13126 /Cassette_Unit.3A
+24VDC_SCANNER_UNIT
-W940,-W941,-W942,-W943 RD,RD,RD,RD
#13128 /Scanner_Unit.2A
+24VDC_ERASURE_UNIT
-W948,-W949,-W950,-W951 RD,RD,RD,RD
#13125 /ERASURE_UNIT.2A
110-240VAC 50/60Hz
Main-Switch
-S3
-BU139 1/1
-BU140 1/1
1
2
3
4
-BU135 1/1
-BU136 1/1
-W967 BK
-W968 BU
-W972 BK
L
N
PE
L1
N1
PE1
-BU138 1/1
-BU141 1/1
-BU137 1/1
-W971 BU
-W972 BK
F7.0460.9064.0
F8.5175.8585.0A
-3 1/1 F7.0475.9990.0
-4 1/1 F7.0475.9990.0
-5 1/1 F7.0475.9990.0
-W970 GNYE
-PE 1/1 F7.0471.3217.0
ACL
ACN
PE
Power Supply
24V DC / 12,5A
F7.0486.1420.0
-B420
C101837
+24VDC
+24VDC
GND
GND
-2 1/1 F7.0473.6252.0
-6 1/1 F7.0473.6252.0
-1 1/1 F7.0473.6252.0
-7 1/1 F7.0473.6252.0
F8.5175.8580.0
Cassette Unit open
Safety Switch
-W963 RD
-W964 RD
-BU69 1/1
-BU70 1/1
7
3
8
4
-S2
-BU73 1/1
-BU71 1/1
F8.5175.8580.0
F8.5175.8580.0
F8.5175.8580.0
-XK3
F7.0473.6056.0
-BU92 1/1 1a -W924,-W925 RD,RD
-BU91 1/1 1b -W926,-W927 RD,RD
-BU90 1/1 1c -W961 RD
-BU96 1/1 2a -W940,-W941 RD,RD
-BU97 1/1 2b -W962 RD
-BU98 1/1 2c -W942,-W943 RD,RD
-BU102 1/1 3a
-BU104 1/1 3b -W965 BK
-BU105 1/1 3c -W944,-W945 BK,BK
-BU103 1/1 4a -W966 BK
-BU110 1/1 4b -W928,-W929 BK,BK
-BU111 1/1 4c -W930,-W931 BK,BK
-BU93 1/1 1d -W932,-W933 RD,RD
-BU94 1/1 1e -W934,-W935 RD,RD
-BU95 1/1 1f
-BU99 1/1 2d -W948,-W949 RD,RD
-BU100 1/1 2e -W950,-W951 RD,RD
-BU101 1/1 2f
-BU106 1/1 3d -W952,-W953 BK,BK
-BU107 1/1 3e -W954,-W955 BK,BK
-BU108 1/1 3f -W936,-W937 BK,BK
-BU109 1/1 4d -W938,-W939 BK,BK
-BU112 1/1 4e -W946,-W947 BK,BK
4f
-W946,-W947 BK,BK
GND_ERASURE_UNIT
#13125 /ERASURE_UNIT.2A
GND_CASSETTE_UNIT
#13126 /Cassette_Unit.3A
GND_PMI_POWER_DISTR:
-W928,-W929,-W930,-W931 BK,BK,BK,BK
#13127 /Light_Collector.1A
GND_SCANNER_UNIT
-W944,-W945,-W946,-W947 BK,BK,BK,BK
#13128 /Scanner_Unit.2A
Input Firewire
1
-ST33
F7.0471.9197.0
F7.0477.1087.0 6p FireWireCable
A
B
-W960
F7.0477.1087.0
#14073 /Light_Collector.3A

					DATE	NAME	General Schematic	Project
				USER	03.01.2006	Leith.	CR30-X	5175
				APPR.			Sheet name: FRAME	/ 100
0B	39319	29.08.06	Leith.	NORM				
0A	38631	31.05.06	Leith.	AGFA			F1.5175.8503.0	Sheet 1
	37407	20.04.06	Leith.					of 9 SH
IDX	Change-NR	DATE	NAME				Replacement for	

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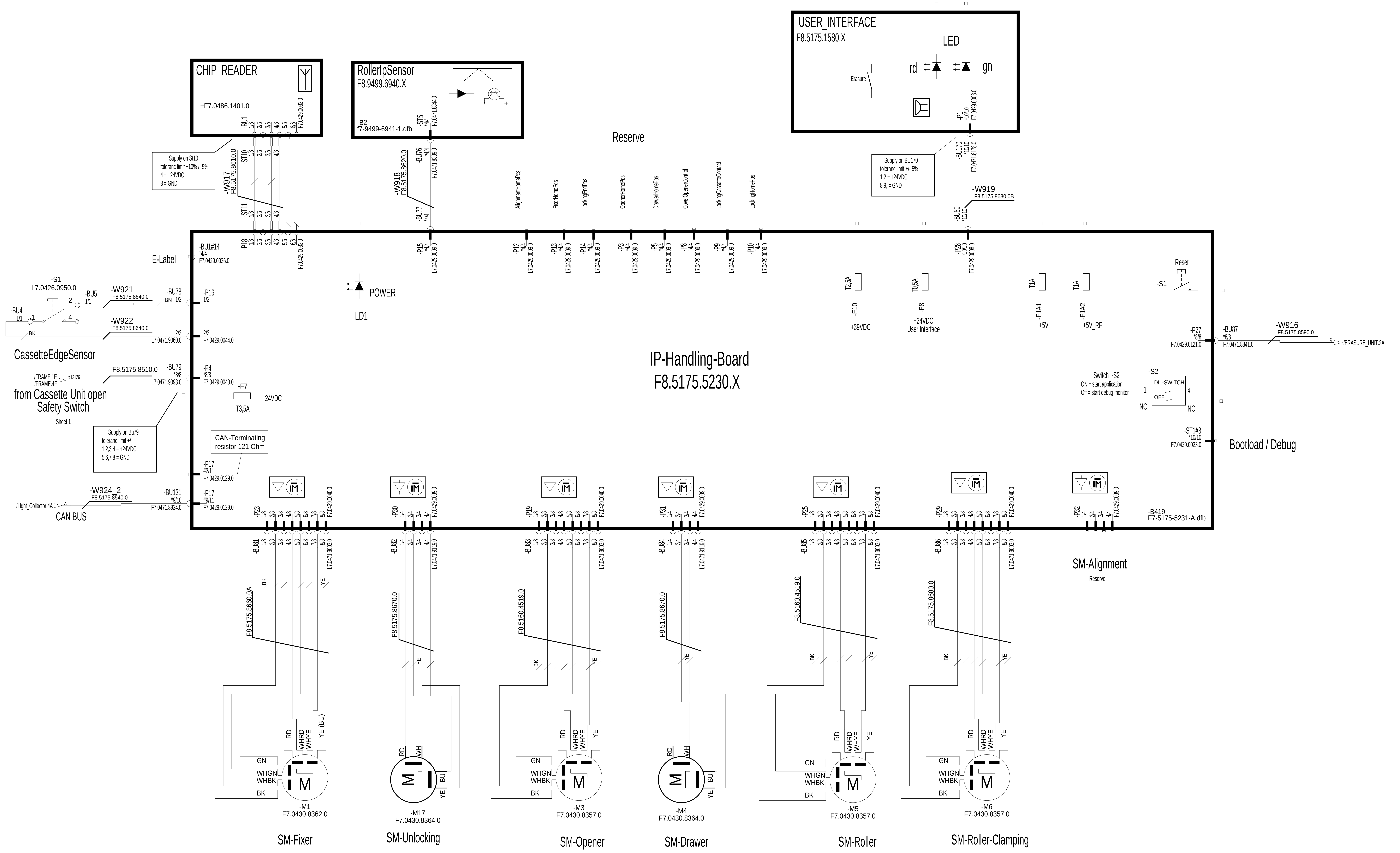
CHIP READER
+F7.0486.1401.0
-BU1
RollerIpSensor
F8.9499.6940.X
-B2
f7-9499-6941-1.dfb
-ST5
USER_INTERFACE
F8.5175.1580.X
LED
rd
gn
Erasure
-P1
Reserve
Supply on St10
toleranc limit +10% / -5%
4 = +24VDC
3 = GND
-ST10
-W917
F8.5175.8610.0
-W918
F8.5175.8620.0
-BU76
-BU77
-ST11
Supply on BU170
toleranc limit +/- 5%
1,2 = +24VDC
8,9, = GND
-BU170
-W919
F8.5175.8630.0B
-BU80
AlignmentHomePos
FixerHomePos
LockingEndPos
OpenerHomePos
DrawerHomePos
CoverOpenerControl
LockingCassetteContact
LockingHomePos
-P18
-P15
-P12
-P13
-P14
-P3
-P5
-P8
-P9
-P10
-P28
E-Label
-BU1#14
F7.0429.0036.0
-S1
L7.0426.0950.0
-BU5
-W921
F8.5175.8640.0
-BU78
BN
-P16
-BU4
BK
-W922
F8.5175.8640.0
L7.0471.9060.0
F7.0429.0044.0
CassetteEdgeSensor
/FRAME.1E
/FRAME.4F
F8.5175.8510.0
-BU79
L7.0471.9093.0
-P4
F7.0429.0040.0
from Cassette Unit open
Safety Switch
Sheet 1
Supply on Bu79
toleranc limit +/-
1,2,3,4 = +24VDC
5,6,7,8 = GND
-F7
T3,5A
24VDC
CAN-Terminating
resistor 121 Ohm
-P17
F7.0429.0129.0
-W924_2
F8.5175.8540.0
-BU131
L7.0471.8924.0
/Light_Collector.4A
CAN BUS
POWER
LD1
IP-Handling-Board
F8.5175.5230.X
T2,5A
-F10
+39VDC
T0,5A
-F8
+24VDC
User Interface
T1A
-F1#1
+5V
T1A
-F1#2
+5V_RF
Reset
-S1
-P27
F7.0429.0121.0
-BU87
F7.0471.8341.0
-W916
F8.5175.8590.0
/ERASURE_UNIT.2A
Switch -S2
ON = start application
Off = start debug monitor
-S2
DIL-SWITCH
OFF
NC
NC
-ST1#3
F7.0429.0023.0
Bootload / Debug
-B419
F7-5175-5231-A.dfb
-P23
-P30
-P19
-P31
-P25
-P29
-P32
-BU81
-BU82
-BU83
-BU84
-BU85
-BU86
SM-Alignment
Reserve
F8.5175.8660.0A
F8.5175.8670.0
F8.5160.4519.0
F8.5175.8670.0
F8.5160.4519.0
F8.5175.8680.0
BK
YE
RD
WHRD
WHYE
YE (BU)
GN
WHGN
WHBK
BK
M
WH
BU
-M1
F7.0430.8362.0
-M17
F7.0430.8364.0
-M3
F7.0430.8357.0
-M4
F7.0430.8364.0
-M5
F7.0430.8357.0
-M6
F7.0430.8357.0
SM-Fixer
SM-Unlocking
SM-Opener
SM-Drawer
SM-Roller
SM-Roller-Clamping

					DATE	NAME	General Schematic CR30-X Sheet name: Cassette_Unit
				USER	03.01.2006	Leith.	
				APPR.			
0B	39319	29.08.06	Leith.	NORM			
0A	38631	31.05.06	leith.	AGFA			F1.5175.8503.0
	37407	20.04.06	Leith.				
IDX	Change-NR	DATE	NAME				Replacement for

Project
5175
/ 100

Sheet 2
of 9 SH

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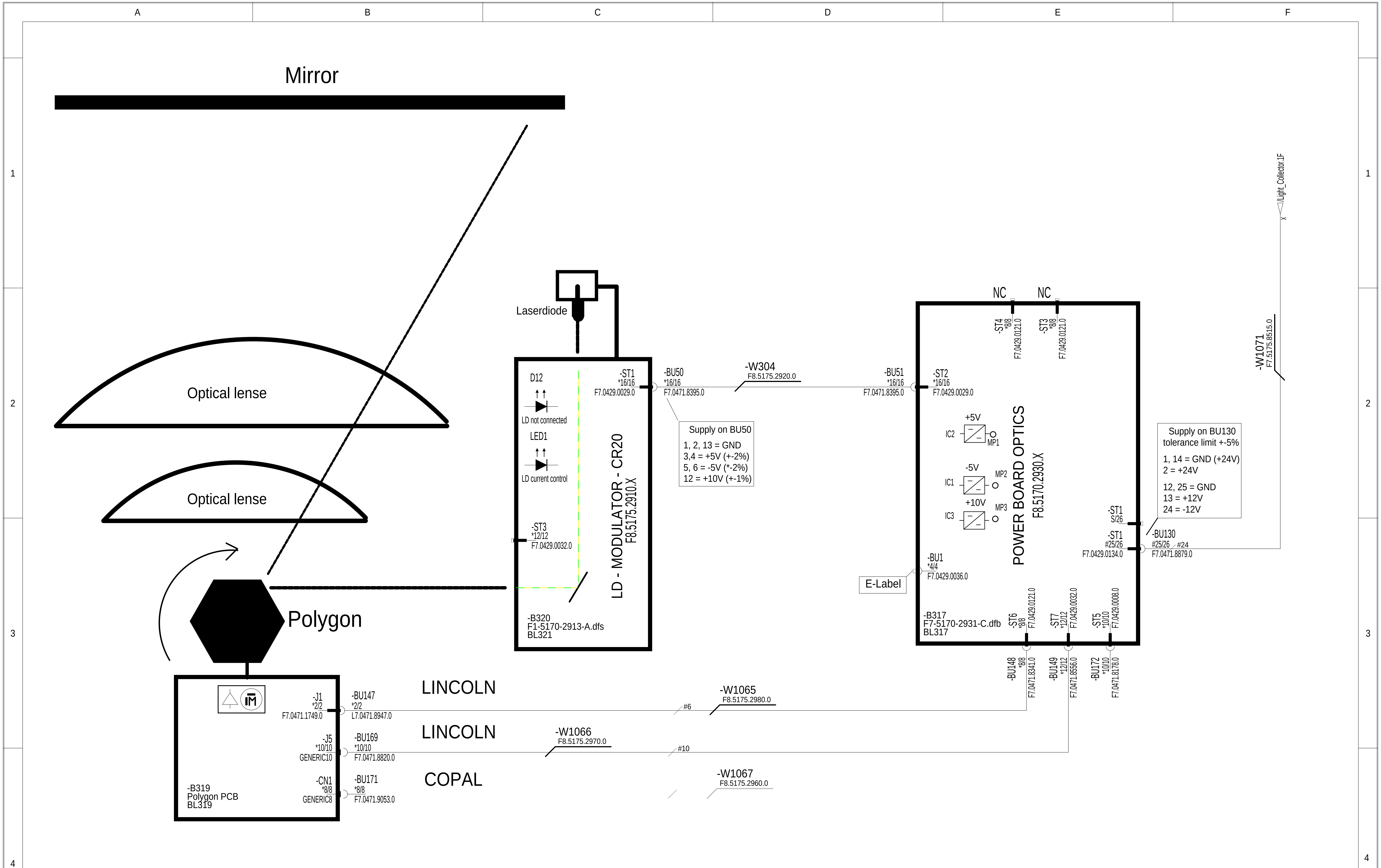
Mirror
Optical lense
Optical lense
Polygon
Laserdiode
D12
LD not connected
LED1
LD current control
-ST1
*16/16
F7.0429.0029.0
-ST3
*12/12
F7.0429.0032.0
LD - MODULATOR - CR20
F8.5175.2910.X
-B320
F1-5170-2913-A.dfs
BL321
-BU50
*16/16
F7.0471.8395.0
-W304
F8.5175.2920.0
-BU51
*16/16
F7.0471.8395.0
-ST2
*16/16
F7.0429.0029.0
NC
NC
-ST4
*8/8
F7.0429.0121.0
-ST3
*8/8
F7.0429.0121.0
+5V
IC2
MP1
-5V
IC1
MP2
+10V
IC3
MP3
POWER BOARD OPTICS
F8.5170.2930.X
-BU1
*4/4
F7.0429.0036.0
E-Label
-B317
F7-5170-2931-C.dfb
BL317
-ST6
*8/8
F7.0429.0121.0
-ST7
*12/12
F7.0429.0032.0
-ST5
*10/10
F7.0429.0008.0
-ST1
S/26
-ST1
#25/26
F7.0429.0134.0
-BU130
#25/26
#24
F7.0471.8879.0
-W1071
F7.5175.8515.0
/Light_Collector.1F
X
-BU148
*8/8
F7.0471.8341.0
-BU149
*12/12
F7.0471.8556.0
-BU172
*10/10
F7.0471.8178.0
-J1
*2/2
F7.0471.1749.0
-BU147
*2/2
L7.0471.8947.0
LINCOLN
#6
-W1065
F8.5175.2980.0
-J5
*10/10
GENERIC10
-BU169
*10/10
F7.0471.8820.0
LINCOLN
-W1066
F8.5175.2970.0
#10
-CN1
*8/8
GENERIC8
-BU171
*8/8
F7.0471.9053.0
COPAL
-W1067
F8.5175.2960.0
-B319
Polygon PCB
BL319

Supply on BU50

1, 2, 13 = GND
3,4 = +5V (+-2%)
5, 6 = -5V (*-2%)
12 = +10V (+-1%)

Supply on BU130
tolerance limit +-5%

1, 14 = GND (+24V)
2 = +24V

12, 25 = GND
13 = +12V
24 = -12V

					DATE	NAME		
				USER	03.01.2006	Leith.	General Schematic CR30-X	Project 5175
				APPR.				
0B	39319	29.08.06	Leith.	NORM			Sheet name: Scan_Modul	/ 100
0A	38631	31.05.06	Leith.	AGFA			F1.5175.8503.0	Sheet 3 of 9 SH
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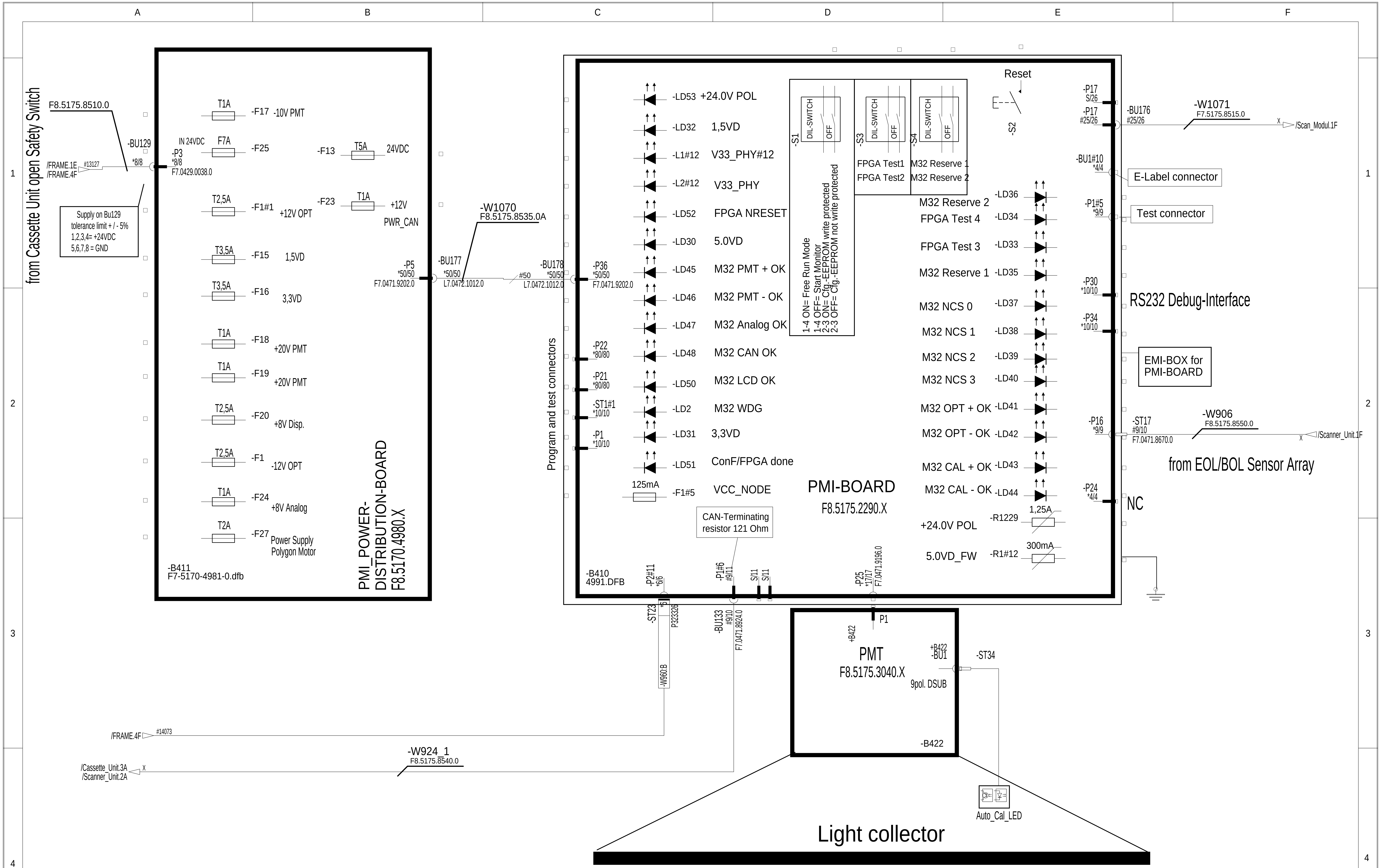
from Cassette Unit open Safety Switch
F8.5175.8510.0
-BU129
/FRAME.1E
/FRAME.4F
#13127
*8/8
Supply on Bu129
tolerance limit + / - 5%
1,2,3,4= +24VDC
5,6,7,8 = GND
IN 24VDC
-P3
*8/8
F7.0429.0038.0
T1A -F17 -10V PMT
F7A -F25
-F13 T5A 24VDC
T2,5A -F1#1 +12V OPT
-F23 T1A +12V PWR_CAN
T3,5A -F15 1,5VD
T3,5A -F16 3,3VD
T1A -F18 +20V PMT
T1A -F19 +20V PMT
T2,5A -F20 +8V Disp.
T2,5A -F1 -12V OPT
T1A -F24 +8V Analog
T2A -F27 Power Supply Polygon Motor
-B411
F7-5170-4981-0.dfb
PMI_POWER-DISTRIBUTION-BOARD
F8.5170.4980.X
-P5
*50/50
F7.0471.9202.0
-BU177
*50/50
L7.0472.1012.0
-W1070
F8.5175.8535.0A
#50
-BU178
*50/50
L7.0472.1012.0
-P36
*50/50
F7.0471.9202.0
Program and test connectors
-P22 *80/80
-P21 *80/80
-ST1#1 *10/10
-P1 *10/10
-LD53 +24.0V POL
-LD32 1,5VD
-L1#12 V33_PHY#12
-L2#12 V33_PHY
-LD52 FPGA NRESET
-LD30 5.0VD
-LD45 M32 PMT + OK
-LD46 M32 PMT - OK
-LD47 M32 Analog OK
-LD48 M32 CAN OK
-LD50 M32 LCD OK
-LD2 M32 WDG
-LD31 3,3VD
-LD51 ConF/FPGA done
125mA -F1#5 VCC_NODE
CAN-Terminating resistor 121 Ohm
-S1 DIL-SWITCH OFF
1-4 ON= Free Run Mode
1-4 OFF= Start Monitor
2-3 ON= Cfg.-EEPROM write protected
2-3 OFF= Cfg.-EEPROM not write protected
-S3 DIL-SWITCH OFF
FPGA Test1
FPGA Test2
-S4 DIL-SWITCH OFF
M32 Reserve 1
M32 Reserve 2
Reset
-S2
M32 Reserve 2 -LD36
FPGA Test 4 -LD34
FPGA Test 3 -LD33
M32 Reserve 1 -LD35
M32 NCS 0 -LD37
M32 NCS 1 -LD38
M32 NCS 2 -LD39
M32 NCS 3 -LD40
M32 OPT + OK -LD41
M32 OPT - OK -LD42
M32 CAL + OK -LD43
M32 CAL - OK -LD44
PMI-BOARD
F8.5175.2290.X
+24.0V POL -R1229 1,25A
5.0VD_FW -R1#12 300mA
-B410
4991.DFB
-P2#11 *6/6
-P1#6 #9/11
S/11
S/11
-P25 *17/17 F7.0471.9196.0
-P17 S/26
-P17 #25/26
-BU176 #25/26
-W1071
F7.5175.8515.0
/Scan_Modul.1F
-BU1#10 *4/4
E-Label connector
-P1#5 *9/9
Test connector
-P30 *10/10
-P34 *10/10
RS232 Debug-Interface
EMI-BOX for PMI-BOARD
-P16 *9/9
-ST17 #9/10 F7.0471.8670.0
-W906
F8.5175.8550.0
/Scanner_Unit.1F
from EOL/BOL Sensor Array
-P24 *4/4
NC
-ST23 *6/6 P322326
-W960:B
-BU133 #9/10 F7.0471.8924.0
P1
+B422
PMT
F8.5175.3040.X
+B422 -BU1
9pol. DSUB
-ST34
-B422
Auto_Cal_LED
/FRAME.4F #14073
-W924_1
F8.5175.8540.0
/Cassette_Unit.3A
/Scanner_Unit.2A
Light collector

0B	39319	29.08.06	Leith.
0A	38631	31.05.06	Leith.
	37407	20.04.06	Leith.
IDX	Change-NR	DATE	NAME

	DATE	NAME
USER	03.01.2006	Leith.
APPR.		
NORM		

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General Schematic
CR30-X
Sheet name: Light_Collector

Project
5175
/ 100

F1.5175.8503.0

Sheet 4
of 9 SH

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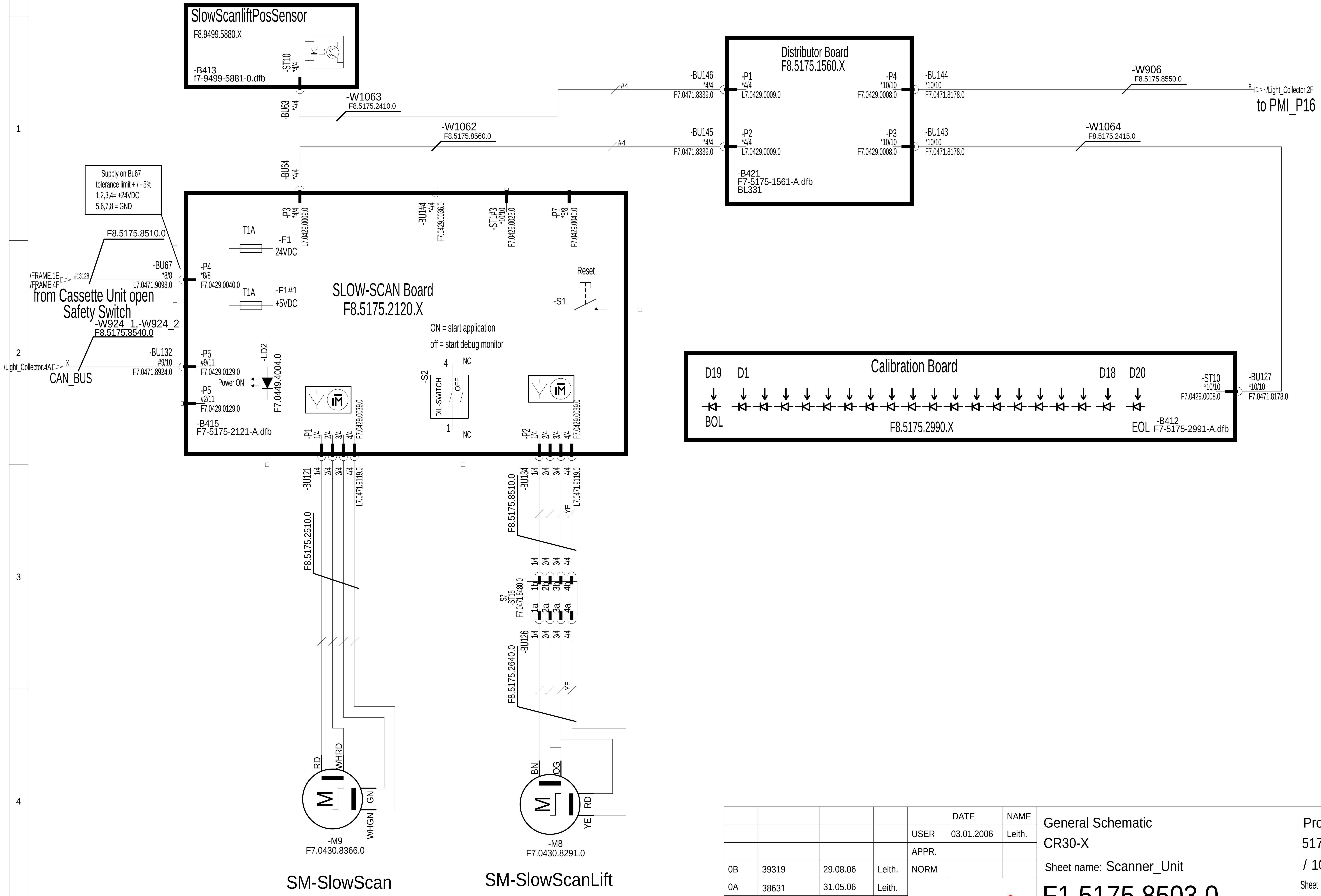
SlowScanliftPosSensor
F8.9499.5880.X
-B413
f7-9499-5881-0.dfb
-ST10
*4/4
-BU63
*4/4
-W1063
F8.5175.2410.0
#4
-W1062
F8.5175.8560.0
#4
-BU64
*4/4
Distributor Board
F8.5175.1560.X
-BU146
*4/4
F7.0471.8339.0
-P1
*4/4
L7.0429.0009.0
-P4
*10/10
F7.0429.0008.0
-BU144
*10/10
F7.0471.8178.0
-BU145
*4/4
F7.0471.8339.0
-P2
*4/4
L7.0429.0009.0
-P3
*10/10
F7.0429.0008.0
-BU143
*10/10
F7.0471.8178.0
-B421
F7-5175-1561-A.dfb
BL331
-W906
F8.5175.8550.0
X
/Light_Collector.2F
to PMI_P16
-W1064
F8.5175.2415.0
Supply on Bu67
tolerance limit + / - 5%
1,2,3,4= +24VDC
5,6,7,8 = GND
F8.5175.8510.0
/FRAME.1E
/FRAME.4F
#13128
-BU67
*8/8
L7.0471.9093.0
from Cassette Unit open
Safety Switch
-W924_1,-W924_2
F8.5175.8540.0
/Light_Collector.4A
X
CAN_BUS
-BU132
#9/10
F7.0471.8924.0
-P3
*4/4
L7.0429.0009.0
-BU1#4
*4/4
F7.0429.0036.0
-ST1#3
*10/10
F7.0429.0023.0
-P7
*8/8
F7.0429.0040.0
T1A
-F1
24VDC
-P4
*8/8
F7.0429.0040.0
T1A
-F1#1
+5VDC
SLOW-SCAN Board
F8.5175.2120.X
Reset
-S1
ON = start application
off = start debug monitor
-P5
#9/11
F7.0429.0129.0
-P5
#2/11
F7.0429.0129.0
Power ON
-LD2
F7.0449.4004.0
-S2
DIL-SWITCH
OFF
4
NC
1
NC
-B415
F7-5175-2121-A.dfb
-P1
1/4
2/4
3/4
4/4
F7.0429.0039.0
-P2
1/4
2/4
3/4
4/4
F7.0429.0039.0
-BU121
1/4
2/4
3/4
4/4
L7.0471.9119.0
F8.5175.2510.0
-BU134
1/4
2/4
3/4
4/4
L7.0471.9119.0
F8.5175.8510.0
YE
1/4
2/4
3/4
4/4
S7
-ST15
F7.0471.8480.0
1b
2b
3b
4b
1a
2a
3a
4a
-BU126
1/4
2/4
3/4
4/4
F8.5175.2640.0
YE
RD
WHRD
GN
WHGN
M
-M9
F7.0430.8366.0
BN
OG
RD
YE
M
-M8
F7.0430.8291.0
Calibration Board
D19
D1
D18
D20
BOL
F8.5175.2990.X
EOL
-B412
F7-5175-2991-A.dfb
-ST10
*10/10
F7.0429.0008.0
-BU127
*10/10
F7.0471.8178.0

SM-SlowScan

SM-SlowScanLift

IDX	Change-NR	DATE	NAME
0B	39319	29.08.06	Leith.
0A	38631	31.05.06	Leith.
	37407	20.04.06	Leith.

	DATE	NAME
USER	03.01.2006	Leith.
APPR.		
NORM		

AGFA

General Schematic
CR30-X
Sheet name: Scanner_Unit

F1.5175.8503.0

Replacement for

Project
5175
/ 100
Sheet 5
of 9 SH

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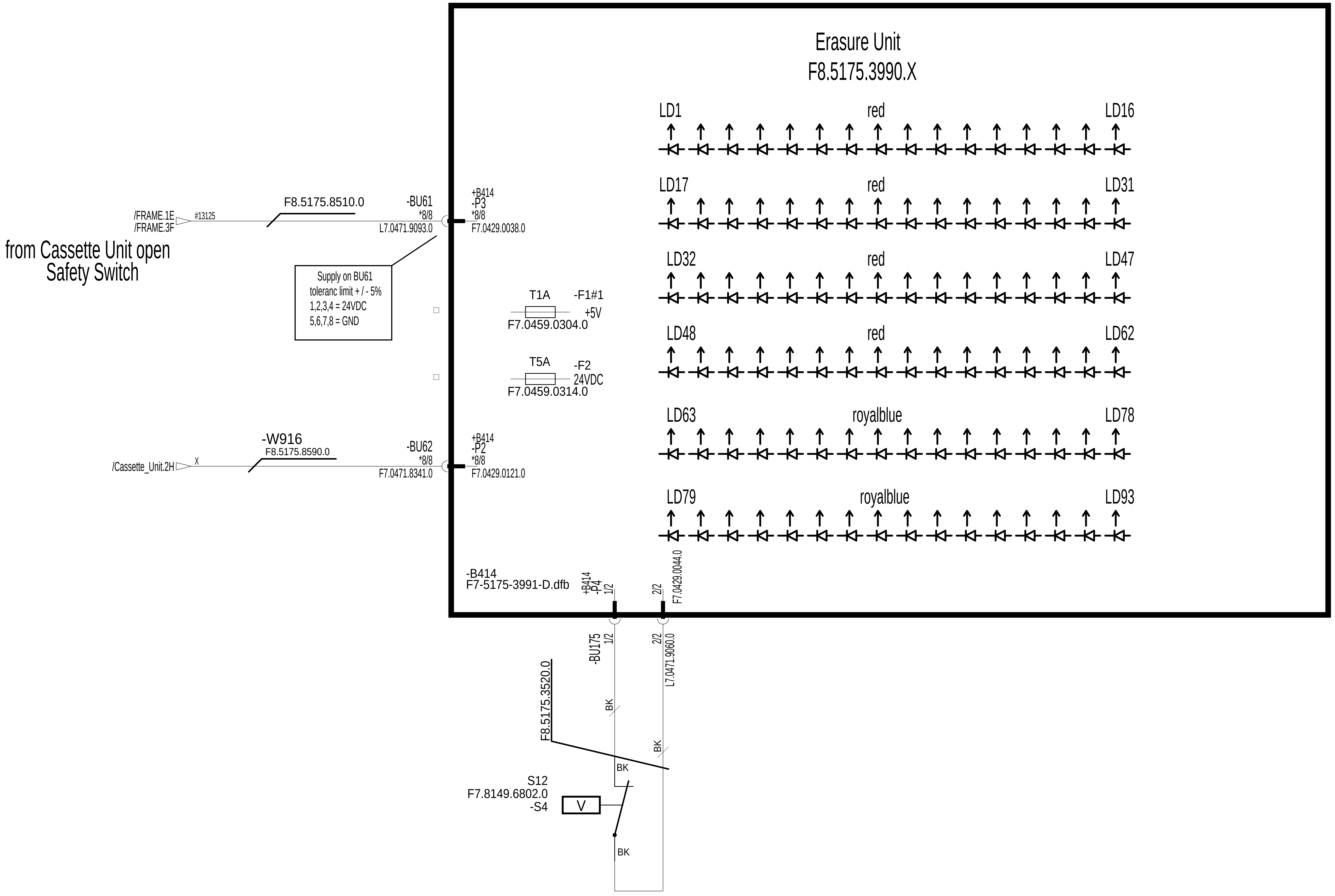
Erasure Unit
F8.5175.3990.X
LD1
red
LD16
LD17
red
LD31
LD32
red
LD47
LD48
red
LD62
LD63
royalblue
LD78
LD79
royalblue
LD93
/FRAME.1E
/FRAME.3F
#13125
F8.5175.8510.0
-BU61
*8/8
L7.0471.9093.0
+B414
-P3
*8/8
F7.0429.0038.0
from Cassette Unit open
Safety Switch
Supply on BU61
toleranc limit + / - 5%
1,2,3,4 = 24VDC
5,6,7,8 = GND
T1A
-F1#1
+5V
F7.0459.0304.0
T5A
-F2
24VDC
F7.0459.0314.0
/Cassette_Unit.2H
X
-W916
F8.5175.8590.0
-BU62
*8/8
F7.0471.8341.0
+B414
-P2
*8/8
F7.0429.0121.0
-B414
F7-5175-3991-D.dfb
+B414
-P4
1/2
2/2
F7.0429.0044.0
-BU175
1/2
2/2
L7.0471.9060.0
F8.5175.3520.0
BK
BK
BK
S12
F7.8149.6802.0
-S4
V
BK

					DATE	NAME
				USER	04.01.2006	Leith.
				APPR.		
0B	39319	29.08.06	Leith.	NORM		
0A	38631	31.05.06	Leith.			
	37407	20.04.06	Leith.			
IDX	Change-NR	DATE	NAME			

AGFA Agfa

General Schematic
CR30-X
Sheet name: ERASURE_UNIT

F1.5175.8503.0

Replacement for

Project
5175
/ 100

Sheet 6
of 9 SH

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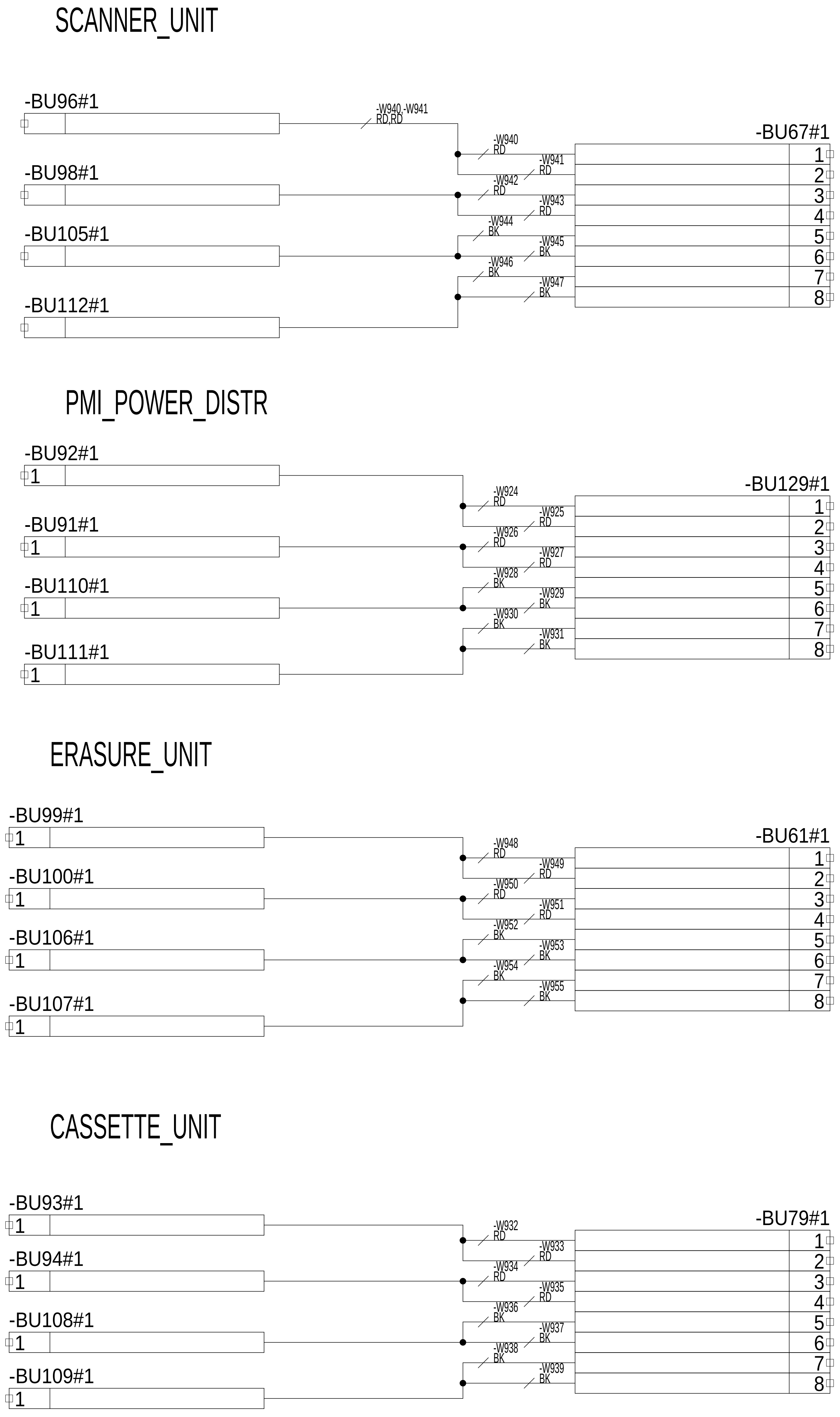
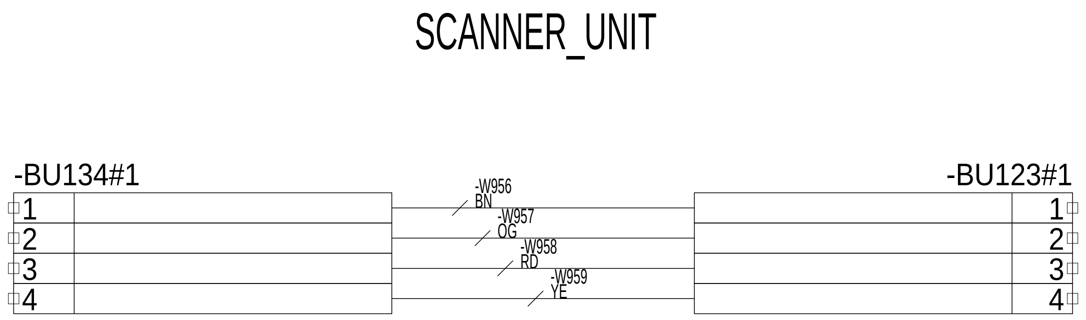

SCANNER_UNIT
-BU96#1
-BU98#1
-BU105#1
-BU112#1
-W940,-W941
RD,RD
-W940
RD
-W941
RD
-W942
RD
-W943
RD
-W944
BK
-W945
BK
-W946
BK
-W947
BK
-BU67#1
1
2
3
4
5
6
7
8
PMI_POWER_DISTR
-BU92#1
1
-BU91#1
1
-BU110#1
1
-BU111#1
1
-W924
RD
-W925
RD
-W926
RD
-W927
RD
-W928
BK
-W929
BK
-W930
BK
-W931
BK
-BU129#1
1
2
3
4
5
6
7
8
ERASURE_UNIT
-BU99#1
1
-BU100#1
1
-BU106#1
1
-BU107#1
1
-W948
RD
-W949
RD
-W950
RD
-W951
RD
-W952
BK
-W953
BK
-W954
BK
-W955
BK
-BU61#1
1
2
3
4
5
6
7
8
CASSETTE_UNIT
-BU93#1
1
-BU94#1
1
-BU108#1
1
-BU109#1
1
-W932
RD
-W933
RD
-W934
RD
-W935
RD
-W936
BK
-W937
BK
-W938
BK
-W939
BK
-BU79#1
1
2
3
4
5
6
7
8

BGR F8.5175.8510.0


SCANNER_UNIT
-BU134#1
1
2
3
4
-W956
BN
-W957
OG
-W958
RD
-W959
YE
-BU123#1
1
2
3
4

					DATE	NAME		
				USER	07.02.2006	Leith.	Wiring Harness Supply Voltage CR30-X	Project 5175 / 100
				APPR.				
0B	39319	29.08.06	Leith.	NORM			Sheet name: Wire_harness_5175.8510	
0A	38631	31.05.06	Leith.	AGFA			F1.5175.8503.0	Sheet 7 of 9 SH
	37407	20.04.06	Leith.					
IDX	Change-NR	DATE	NAME				Replacement for	

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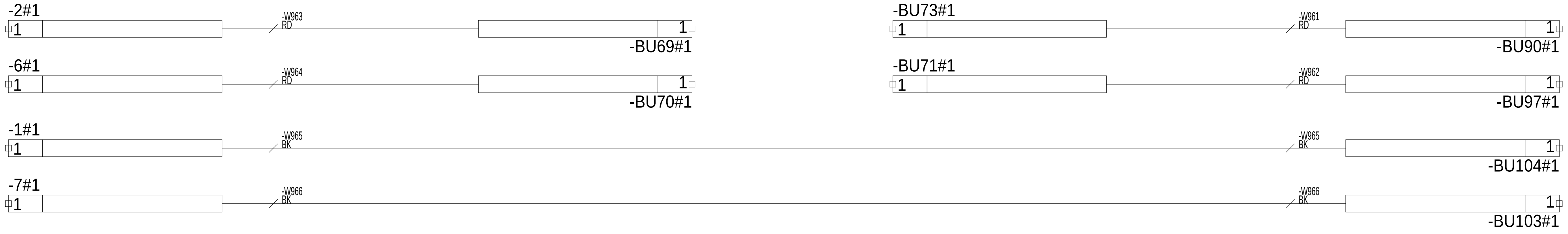
BGR F8.5175.8580.0


-2#1
1
-W963
RD
1
-BU69#1
-6#1
1
-W964
RD
1
-BU70#1
-1#1
1
-W965
BK
-7#1
1
-W966
BK
-BU73#1
1
-W961
RD
1
-BU90#1
-BU71#1
1
-W962
RD
1
-BU97#1
-W965
BK
1
-BU104#1
-W966
BK
1
-BU103#1

IDX	Change-NR	DATE	NAME
0B	39319	29.08.06	Leith.
0A	38631	31.05.06	Leith.
	37407	20.04.06	Leith.

	DATE	NAME
USER	15.02.2006	Leith.
APPR.		
NORM		

AGFA Agfa

Wiring Harness Interlock
CR30-X
Sheet name: Wire_harness_5175.8580

Project
5175
/ 100

F1.5175.8503.0

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of 9 SH

Replacement for

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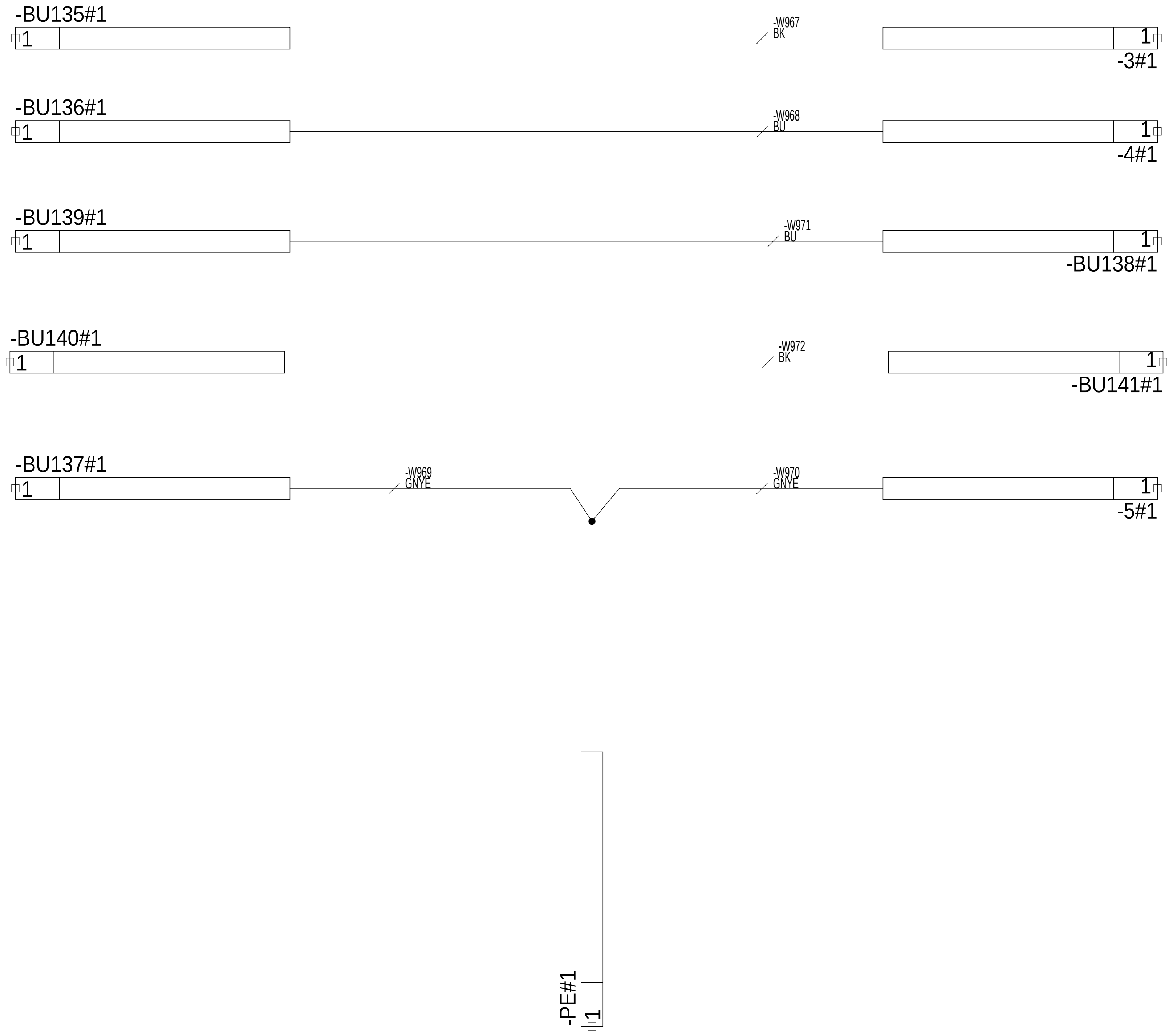
-BU135#1
1
-W967
BK
1
-3#1
-BU136#1
1
-W968
BU
1
-4#1
-BU139#1
1
-W971
BU
1
-BU138#1
-BU140#1
1
-W972
BK
1
-BU141#1
-BU137#1
1
-W969
GNYE
-W970
GNYE
1
-5#1
-PE#1
1

IDX	Change-NR	DATE	NAME
0B	39319	29.08.06	Leith.
0A	38631	31.05.06	Leith.
	37407	20.04.06	Leith.

	DATE	NAME
USER	15.02.2006	Leith.
APPR.		
NORM		

AGFA Agfa

Wiring Harness Input Voltage
CR30-X

Sheet name: Wire_harness_5175.8585

F1.5175.8503.0

Replacement for

Project
5175
/ 100

Sheet 9
of 9 SH

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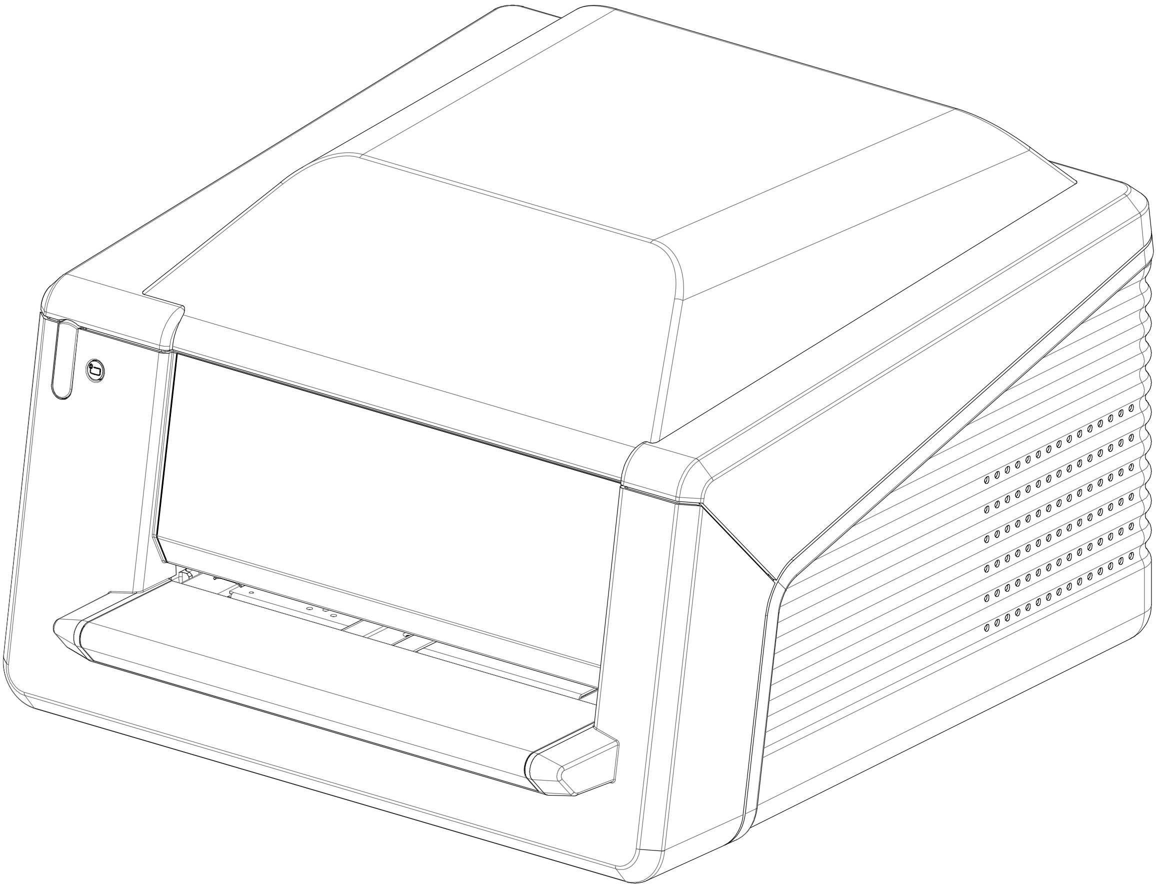
HEALTHCARE
Imaging Services

Spare Parts List

Document No: DD+DIS325.06M

CR 30-X

Type 5175/100/110



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Manufacturer

Agfa HealthCare N.V

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WARNING:
Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see Agfa HealthCare Library > General Info > Agfa HealthCare > Publications > Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

WARNING:

Hazards may be introduced because of component failure or improper operation.

INSTRUCTION:

- Replace defective parts with Agfa HealthCare original spare parts.
- Use only tools and measuring instruments which are suitable for the procedure.
- Only approved Agfa HealthCare accessories must be used. For a list of compatible accessories contact your local Agfa HealthCare organization or www.agfa.com.

NOTE:
To verify the latest version of a chapter of the Service Manual refer to the “Checklist for Completeness” in the Agfa HealthCare Library.

Document History

Edition, Revision	Release Date	Changes compared to previous Version 1.3
1.4	11-2011	Index of Spare Parts Numbers updated. Spare Part "Firewire connector shield", "Levelizer", "Top cover Digitizer silver", "Front cover Digitizer silver" added, refer to section: Cover. "Sliders of drawer unit", "Cassette reader cable" , "Power Sequencer Board", "Cassette Detection hook" added, refer to section: Drawer. "Cassette 35x35" added.

✓ DISCLAIMER:

Actual delivered spare parts may differ (in appearance) from the images shown and/or ordered spare parts.
The codes of the ordered spare parts can vary from the code of the delivered spare parts.
Agfa HealthCare warrants that the delivered spare parts have at least the same functionalities.
Agfa HealthCare reserves the right to deliver compatible or alternative spare parts.
Prices may differ from the original order as these spare parts will be invoiced at current prices.

✓ NOTE:

Repaired Spare Parts are indicated with Prefix RF+.
Repaired Spare Parts may differ in lifetime.

✓ NOTE:

Recycling of the electronic and electrical waste equipment will ensure safety of the human health and the environment.
For information about electronic and electrical waste equipment disposal, recovery and collection points, please contact your local waste disposal service or the producer / distributor of this equipment.
If your equipment contains removable batteries or accumulators please dispose of these separately according to local regulations.

Contact

Spare Parts ordering	Europe:	Orderprocessing-europe@matrium.net
	Overseas:	Orderprocessing-overseas@matrium.net
Spare Parts returns	Worldwide:	Returns@matrium.net

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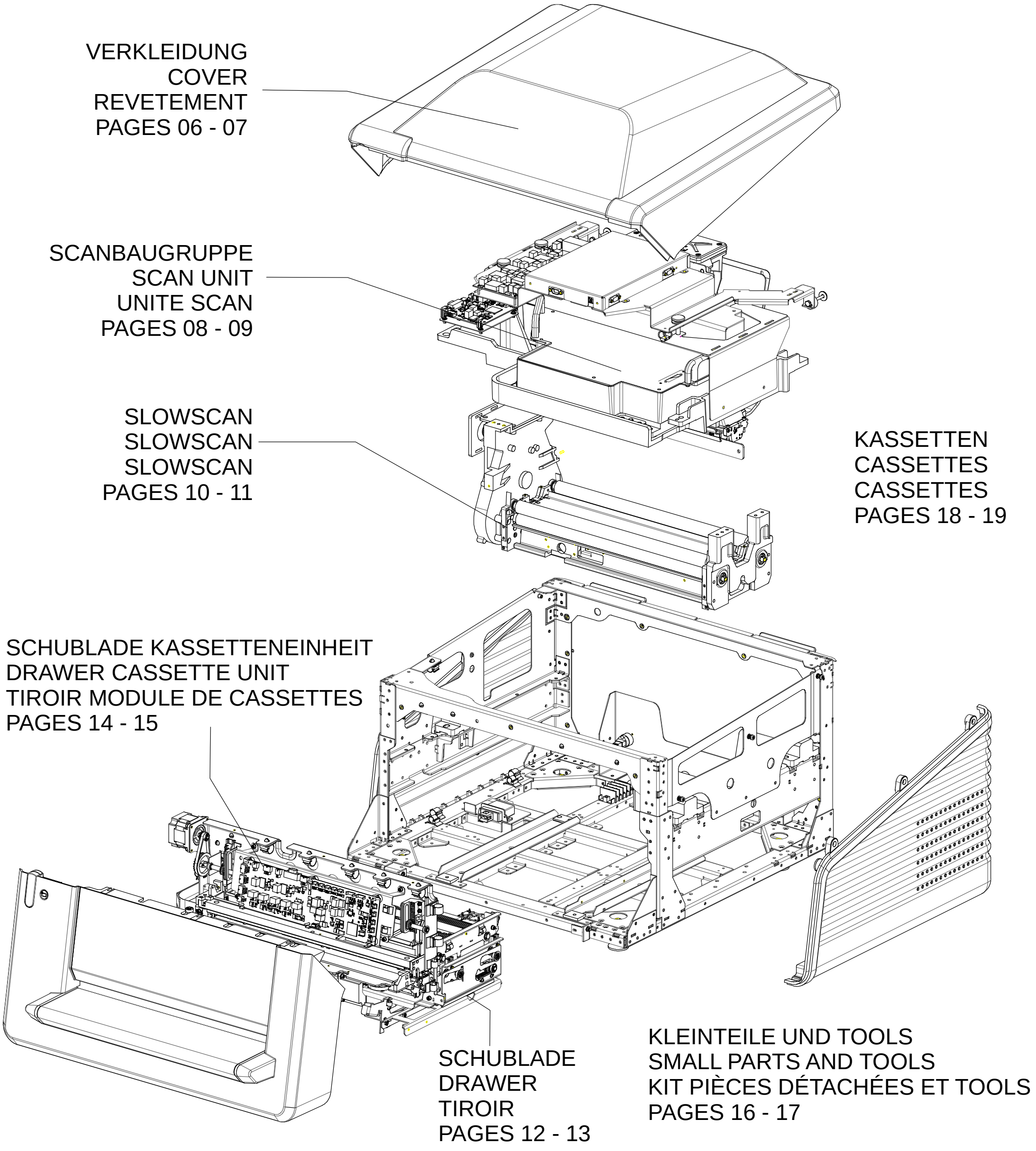
Contents


VERKLEIDUNG
COVER
REVETEMENT
PAGES 06 - 07
SCANBAUGRUPPE
SCAN UNIT
UNITE SCAN
PAGES 08 - 09
SLOWSCAN
SLOWSCAN
SLOWSCAN
PAGES 10 - 11
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CASSETTES
CASSETTES
PAGES 18 - 19
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DRAWER CASSETTE UNIT
TIROIR MODULE DE CASSETTES
PAGES 14 - 15
SCHUBLADE
DRAWER
TIROIR
PAGES 12 - 13
KLEINTEILE UND TOOLS
SMALL PARTS AND TOOLS
KIT PIÈCES DÉTACHÉES ET TOOLS
PAGES 16 - 17

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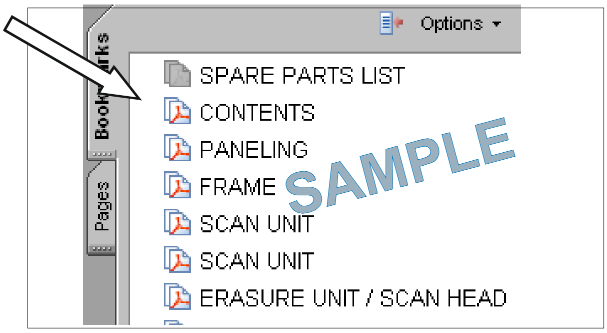
How to navigate the Spare Parts List online with the Acrobat Reader

(1) Open Bookmarks.

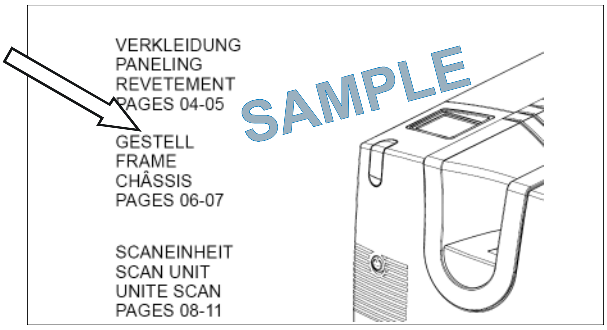
(2) Click on "CONTENTS".



SPARE PARTS LIST
CONTENTS
PANELING
FRAME
SCAN UNIT
SCAN UNIT
ERASURE UNIT / SCAN HEAD

(3) See overview of the modules.

(4) Click on requested module.

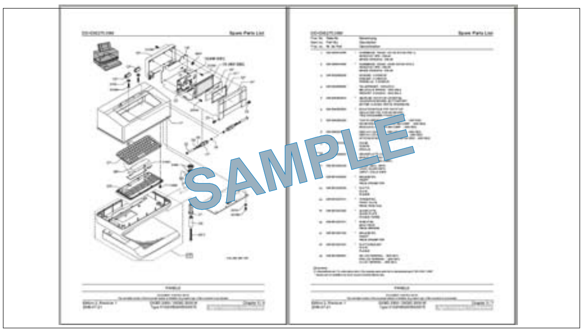


VERKLEIDUNG
PANELING
REVETEMENT
PAGES 04-05

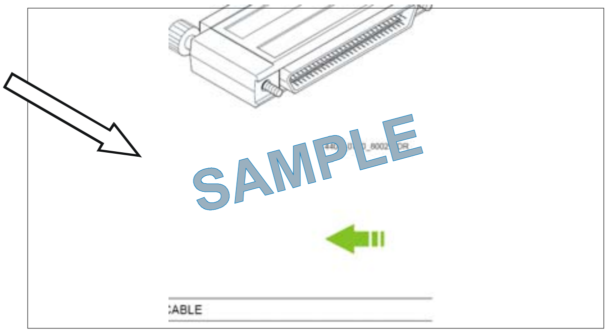
GESTELL
FRAME
CHÂSSIS
PAGES 06-07

SCANEINHEIT
SCAN UNIT
UNITE SCAN
PAGES 08-11

(5) Appropriate page opens.



(6) Click on green arrow to navigate back to the overview of the modules.



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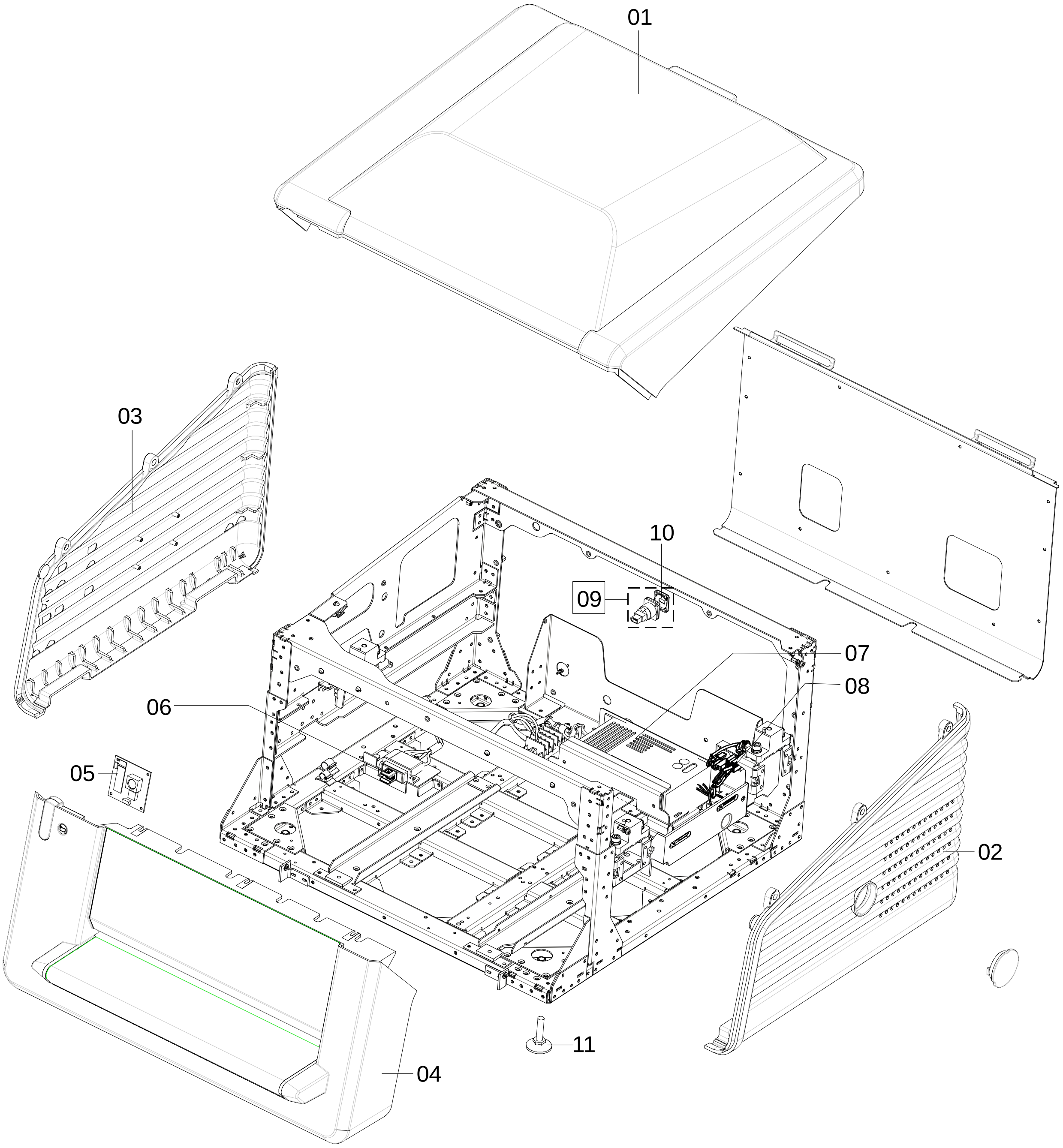

5175_CHAP05_01.CDR

COVER

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Pos. Nr. Item no. Pos. no.	Teile-Nr. Part No. Nr. de Ref.		Benennung Description Denomination
1	CM+9517515400	*	DIGITIZER VERKLEIDUNG OBEN - TYPE 5175/110 TOP COVER DIGITIZER - TYPE 5175/110 CAPOT DIGITIZER - TYPE 5175/110
1	CM+9517516600	*	DIGITIZER VERKLEIDUNG OBEN - SILBER - TYPE 5175/110 AB FN20000 TOP COVER DIGITIZER - SILVER - TYPE 5175/110 FROM SN20000 CAPOT DIGITIZER ARGENT - TYPE 5175/110 A PARTIR DE NS20000
1	CM+9517592000	*	VERKLEIDUNG OBEN CR30-X - TYPE 5175/100 TOP COVER CR30-X - TYPE 5175/100 CAPOT CR30-X - TYPE 5175/100
2	CM+9517515041	*	SEITE RECHTS, LACKIERT RIGHT COVER RÊVETEMENT DROITE
3	CM+9517515031	*	SEITE LINKS, LACKIERT LEFT COVER RÊVETEMENT GAUCHE
4	CM+9517516302	*	VERKLEIDUNG VORN CR30-X - TYPE 5175/100 FRONT COVER CR30-X - TYPE 5175/100 REVÊTEMENT À L'AVANT CR30-X - TYPE 5175/100
4	CM+9517516200	*	VERKLEIDUNG VORN DIGITIZER SILBER - TYPE 5175/110 AB FN20000 FRONT COVER DIGITIZER SILVER - TYPE 5175/110 FROM SN20000 REVÊTEMENT À L'AVANT ARGENT - TYPE 5175/110 A PARTIR DE NS20000
4	CM+9517516500	*	VERKLEIDUNG VORN DIGITIZER - TYPE 5175/110 FRONT COVER DIGITIZER - TYPE 5175/110 REVÊTEMENT À L'AVANT - TYPE 5175/110
5	CM+9517515800		USER INTERFACE USER INTERFACE BOARD USER INTERFACE BOARD
6	CM+9042663040		TÜR, DECKELSCHALTER SAFETY SWITCH PORTE, INTERRUPTEUR DE COUVERCLE
7	CM+9048614200		NETZTEIL POWER SUPPLY ALIMENTATION AVEC INTERRUPTEUR
8	CM+9517585851		NETZTEILKABEL POWER SUPPLY CABLE CABLE D'ALIMENTATION
☐ 9	CM+9517591952		FIREWIRE-STECKER MONTIERT FIREWIRE PLUG FIREWIRE FICHE
10	CM+9517510811		FIREWIRE STECKER BLENDE FIREWIRE CONNECTOR SHIELD FIREWIRE CONNECTOR SHIELD
11	CM+9037213820		STELLFUSS LEVELIZER PIED DE REGLAGE

☐ = Assembly
* = Spare part standardly is not kept in stock, extended delivery time is possible.
99 = Spare Part is not shown in Exploded Views.
RF+: Refurbished Spare Parts

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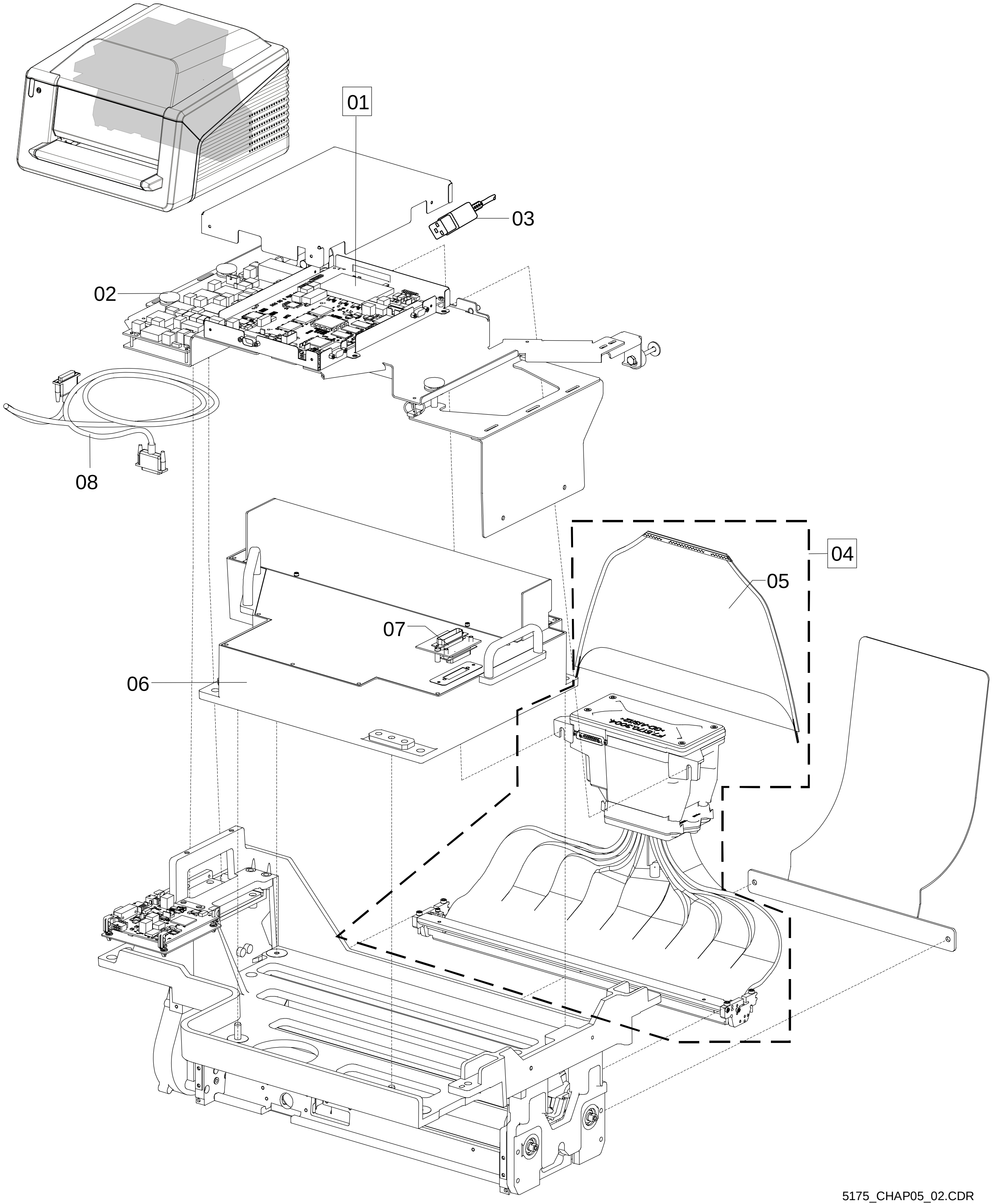

5175_CHAP05_02.CDR

SCAN UNIT

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Pos. Nr. Item no. Pos. no.	Teile-Nr. Part No. Nr. de Ref.	Benennung Description Denomination
$\boxed{1}$	CM+9517521703	PMI3-BOARD PMI3-BOARD PMI3-BOARD
2	CM+9517049602	PMI POWER DISTRIBUTION II PMI POWER DISTRIBUTION II PMI POWER DISTRIBUTION II
3	CM+9047711070	FIREWIRE KABEL, 1.3M FIREWIRE CABLE, 1.3M CABLE FIREWIRE, 1.3M
$\boxed{4}$	CM+9517590106	PMT + LICHTSAMMLER PMT + LIGHT COLLECTOR PMT + CONDUIT DE LUMIÈRE
5	CM+9517524321	ÜBERZUG LICHTSAMMLER PMMA LIGHT COLLECTOR MANTLE LIGHT COLLECTOR MANTLE
6	CM+9517527002	CR30 OPTIK MODUL CR30 OPTIC MODULE ENSEMBLE OPTIQUE CR30
7	CM+9517552601	POWER SEQUENCER BOARD POWER SEQUENCER BOARD EVACUATION RESEAU
8	CM+9517585150	CABLE 25 PIN SUB-D CABLE 25 PIN SUB-D CABLE 25 PIN SUB-D

☐ = Assembly
* = Spare part standardly is not kept in stock, extended delivery time is possible.
99 = Spare Part is not shown in Exploded Views.
RF+: Refurbished Spare Parts

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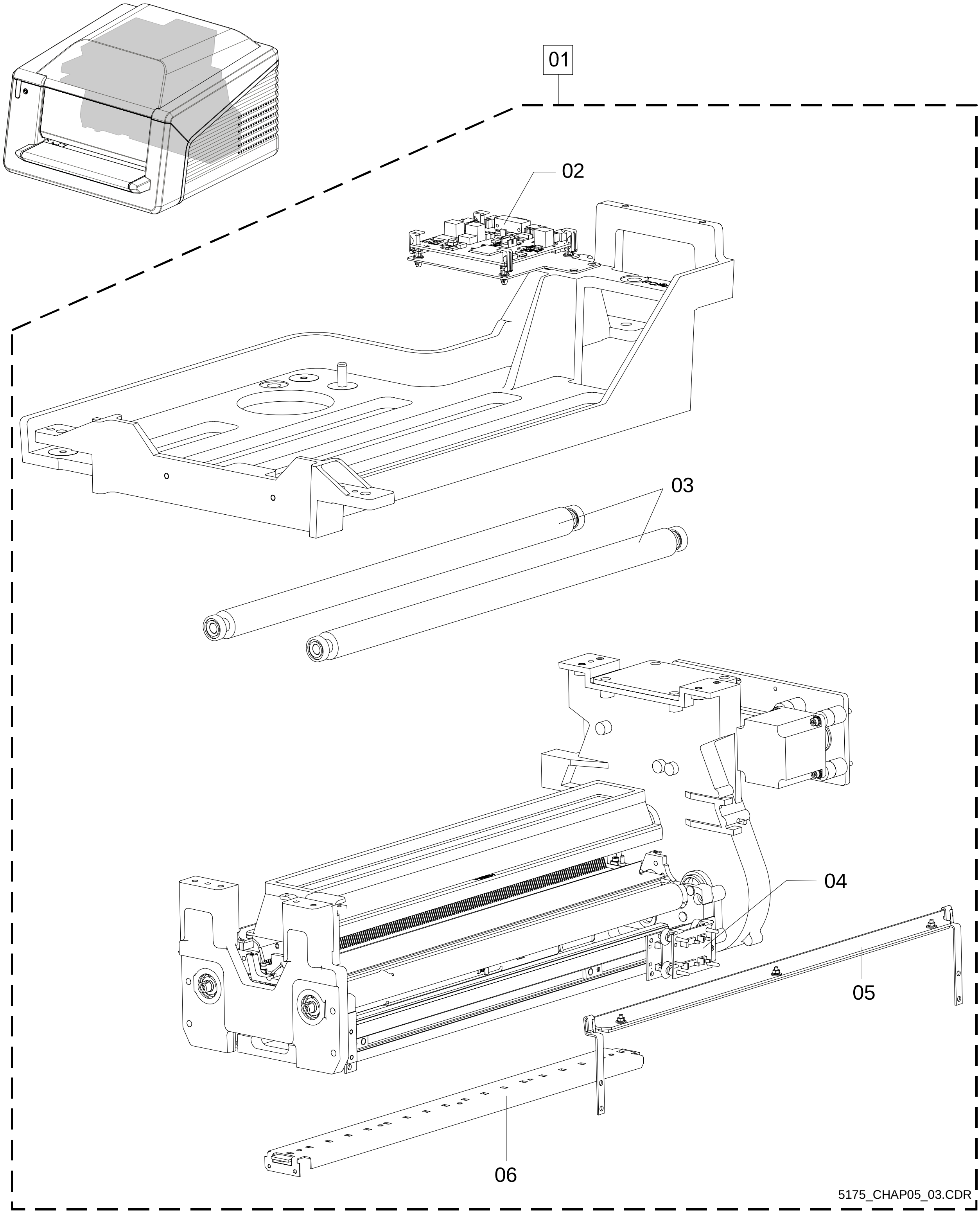
01
02
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5175_CHAP05_03.CDR

SLOWSCAN

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Pos. Nr. Item no. Pos. no.	Teile-Nr. Part No. Nr. de Ref.	Benennung Description Denomination
☐ 1	CM+9517524004	SLOWSCAN KOMPLETT SLOWSCAN COMPLETE SLOWSCAN COMPLET
2	CM+9517521201	SLOWSCAN BOARD SLOWSCAN BOARD SLOWSCAN BOARD
3	CM+9517626501	OBERES WALZENPAAR SCANNER (2 STCK.) UPPER SCAN ROLLERS (2 PIECES) ROEULEAU DE PRESSION (2 PIÈCES)
4	CM+9517515601	CR30 DISTRIBUTON BOARD CR30 DISTRIBUTON BOARD CR30 DISTRIBUTON BOARD
5	CM+9517590801	POSTSCAN ESD BÜRSTE POSTSCAN ESD BRUSH POSTSCAN ESD BRUSH
6	CM+9517524708	CAL-BOARD VOLLST. CAL-BOARD COMPLETE BOARD DE CALIBRAGE

☐ = Assembly
* = Spare part standardly is not kept in stock, extended delivery time is possible.
99 = Spare Part is not shown in Exploded Views.
RF+: Refurbished Spare Parts

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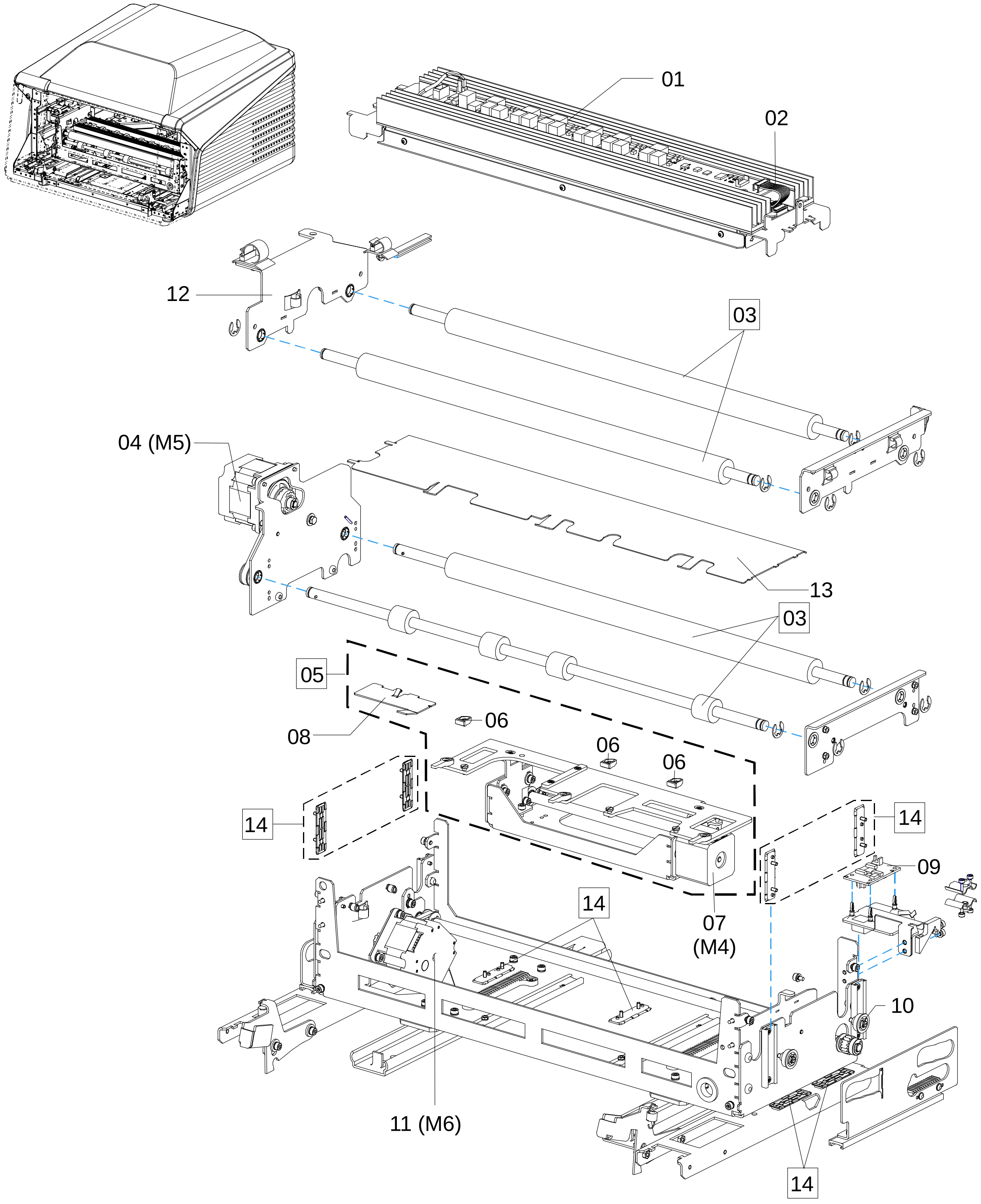
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04 (M5)
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(M4)
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11 (M6)
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DRAWER

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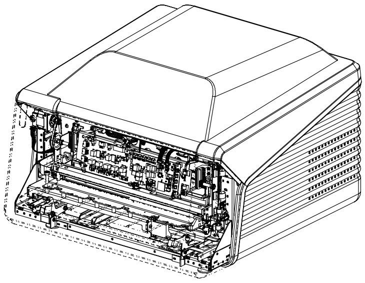
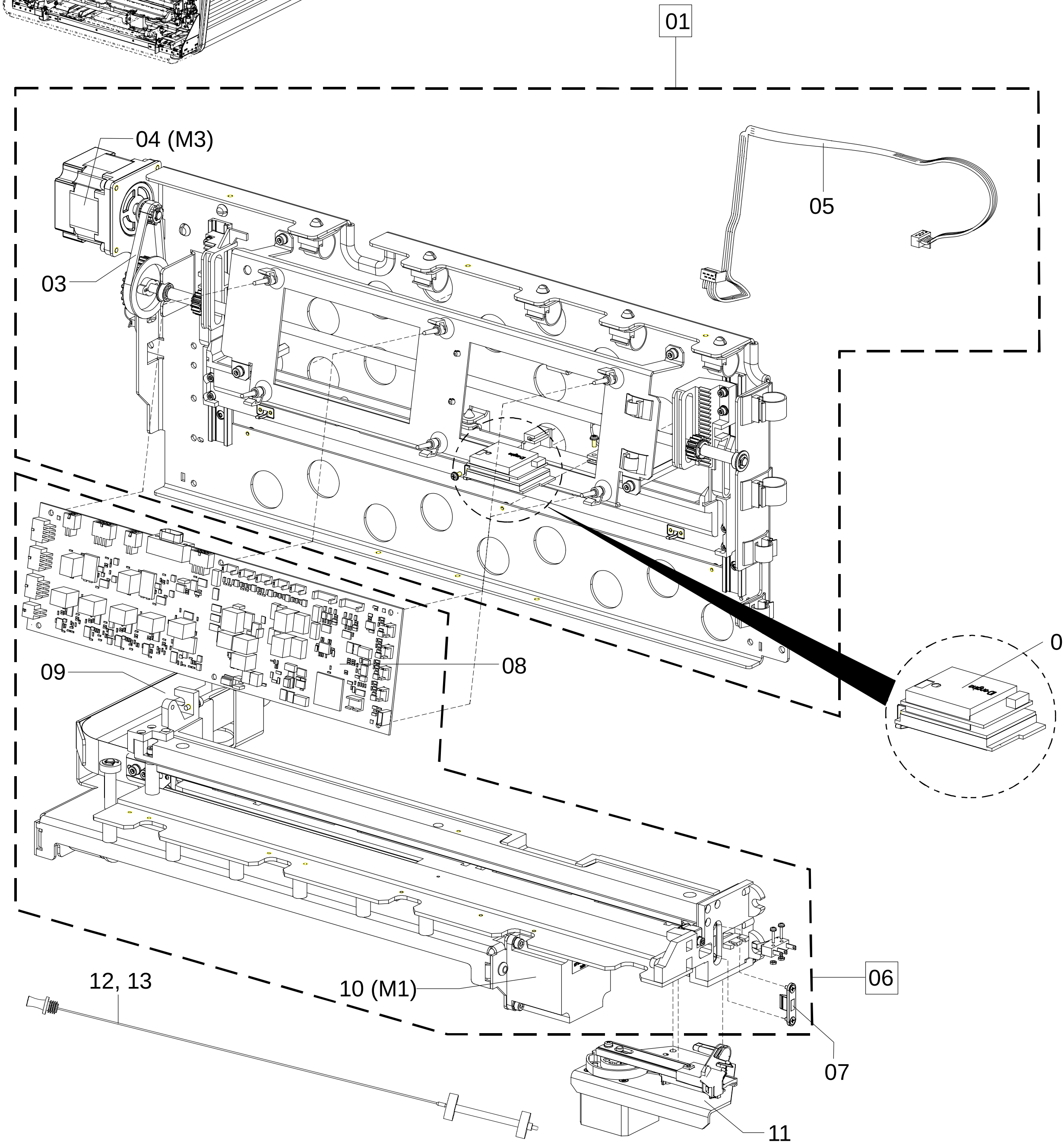
Pos. Nr. Item no. Pos. no.	Teile-Nr. Part No. Nr. de Ref.	Benennung Description Denomination
1	CM+9517536003	LÖSCHEINHEIT ERASURE UNIT UNITE D'EFFACEMENT
2	CM+9517585901	KABEL LÖSCHEINHEIT IP HANDLING BOARD IP-HANDLING ERASURE CABLE IP-HANDLING ERASURE CABLE
☐ 3	CM+9517590304	WALZENPAARE SET INPUT ROLERS PAIRE DE ROULEAUX
4	CM+9517563500	WALZEN MOTOR - (M5) MOTOR ROLLER - (M5) MOTEUR DE ROULEAU - (M5)
☐ 5	CM+9517561008	DRAWER UNIT DRAWER UNIT CHARIOT DE TRANSPORT
6	CM+9517561250	MAGNET, GEKLEBT (3 STCK.) PERMANENT MAGNETS (3 PIECES) FIXATION, COLLÉ (3 PIÈCES)
7	CM+9517586902	TRANSPORTSCHLITTEN MOTOR - (M4) DRAWER MOTOR - (M4) MOTEUR DE CHARIOT TRANSPORT - (M4)
8	CM+9517560012	DRAWER ADJUSTMENT TOOL DRAWER ADJUSTMENT TOOL DRAWER ADJUSTMENT TOOL
9	CM+9949969500	SENSOR IR-REFLEX ROLLER IP SENSOR PHOTOCELLULE DE REFLEXION
10	CM+9517563400	HEBEKULISSENLAGER (1 STCK.) BEARING FOR CONNECTING LINK (1 PIECE) PALIER POUR COULISSE (1 PIECE)
11	CM+9517586800	MOTOR WALZENKLEMMUNG - (M6) MOTOR ROLLER CLAMPING - (M6) MOTEUR DE ROULEAU SERRAGE - (M6)
12	CM+9517598901	SEITENBLECH WALZENPAARE SIDE PLATE INPUT ROLLERS SIDE PLATE INPUT ROLLERS
13	CM+9517690200	FÜHRUNGSBLECH GUIDE PLATE TÔLE CONDUCTRICE
☐ 14	CM+9517561400	GLEITSCHIENEN FÜR DRAWER UNIT SLIDERS OF DRAWER UNIT SLIDERS OF DRAWER UNIT

☐ = Assembly
* = Spare part standardly is not kept in stock, extended delivery time is possible.
99 = Spare Part is not shown in Exploded Views.
RF+: Refurbished Spare Parts

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10 (M1)
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DRAWER CASSETTE UNIT

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Pos. Nr. Item no. Pos. no.	Teile-Nr. Part No. Nr. de Ref.	Benennung Description Denomination
1	CM+9517552003	KASSETTENÖFFNER CASSETTE OPENER UNIT SYSTÈME D'OUVERTURE CASSETTE
2	CM+9048614170	CHIP READER CHIP READER CHIP READER
3	CM+9517590500	ZAHNRIEMEN F. KASSETTENEINHEIT (3 STÜCK) TOOTHED BELTS FOR CASSETTE UNIT (SET OF 3) POULIE A COURROIE POUR MODULE CASSETTE (3 PIECES)
4	CM+9517545190	MOTOR KASSETTENÖFFNER - (M3) MOTOR CASSETTE OPENER - (M3) MOTEUR SYSTEME D'OUVERTURE CASSETTE - (M3)
5	CM+9517686100	KABEL KASSETTEN READER CASSETTE READER CABLE CABLE CASSETTE READER
6	CM+9517590408	KASSETTENAUFNAHME CASSETTE FIXATION UNIT LONGEMENT DE CASSETTE
7	CM+9517554300	KASSETTEN FESTSTELLHAKEN CASSETTE DETECTION HOOK CASSETTE DETECTION HOOK
8	CM+9517552307	IP HANDLING PCB IP HANDLING PCB IP HANDLING PCB
9	CM+9517558301	CASSETTE FIXATION STEEL BAND CASSETTE FIXATION STEEL BAND CASSETTE FIXATION STEEL BAND
10	CM+9517558101	MOTOR KASSETTENKLEMMER - (M1) MOTOR CASSETTE FIXING - (M1) MOTEUR FIXAGE DE CASSETTES - (M1)
11	CM+9517556002	KASSETTENENTRIEGLER CASSETTE UNLOCKING UNIT CASSETTE DEVERROUILLAGE
12	CM+9517514100	BÜRSTE KOMPL. GROSS (BUCHSE Ø4MM) BRUSH COMPLETE LARGE (BUSHING Ø4MM) BROSSE COMPLET GRAND (DOUILLE Ø4MM)
13	CM+9517514110	BÜRSTE KOMPL. KLEIN (BUCHSE Ø3MM) BRUSH COMPLETE SMALL (BUSHING Ø3MM) BROSSE COMPLET PETIT (DOUILLE Ø3MM)

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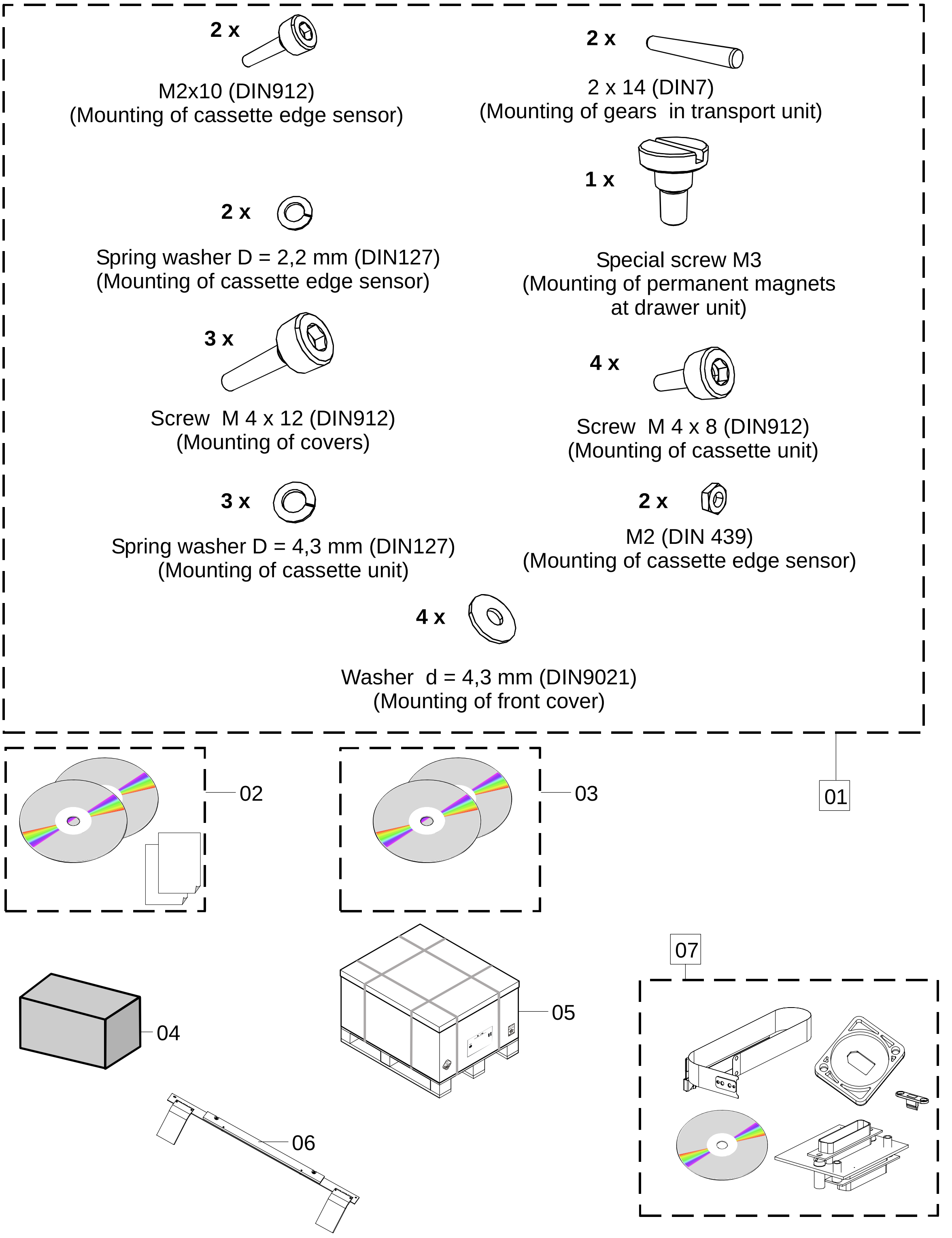
2 x
M2x10 (DIN912)
(Mounting of cassette edge sensor)
2 x
2 x 14 (DIN7)
(Mounting of gears in transport unit)
1 x
2 x
Spring washer D = 2,2 mm (DIN127)
(Mounting of cassette edge sensor)
Special screw M3
(Mounting of permanent magnets
at drawer unit)
3 x
Screw M 4 x 12 (DIN912)
(Mounting of covers)
4 x
Screw M 4 x 8 (DIN912)
(Mounting of cassette unit)
3 x
Spring washer D = 4,3 mm (DIN127)
(Mounting of cassette unit)
2 x
M2 (DIN 439)
(Mounting of cassette edge sensor)
4 x
Washer d = 4,3 mm (DIN9021)
(Mounting of front cover)
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SMALL PARTS AND TOOLS

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Pos. Nr. Item no. Pos. no.	Teile-Nr. Part No. Nr. de Ref.	Benennung Description Denomination
$\boxed{1}$	CM+9517590701	CR30-X KLEINTEILSET CR30-X SMALL PARTS KIT CR30-X KIT PIÈCES DÉTACHÉES
2	CM+9517591402	FLFS UPGRADE KIT CR30-X FLFS UPGRADE KIT CR30-X FLFS UPGRADE KIT CR30-X
3	CM+9517591600	CR30 LIMIT PATTERN CD1.0 CR30 LIMIT PATTERN CD1.0 CR30 LIMIT PATTERN CD1.0
4	CM+9517591302	MODIFIKATION KIT CR30-X MODIFIKATION KIT CR30-X MODIFIKATION KIT CR30-X
5	CM+9517590900	TYPVERPACKUNG CR30-X TYPE PACKAGING CR30-X EMBALLAGE TYPE CR30-X
6	CM+9517529404	LASER-STRAHL LEHRE TOOLKIT LASERBEAM DETECTION TOOLKIT LASERBEAM DETECTION
$\boxed{7}$	CM+9517593003	CR30 IMPROVEMENT PACKAGE CR30 IMPROVEMENT PACKAGE CR30 IMPROVEMENT PACKAGE

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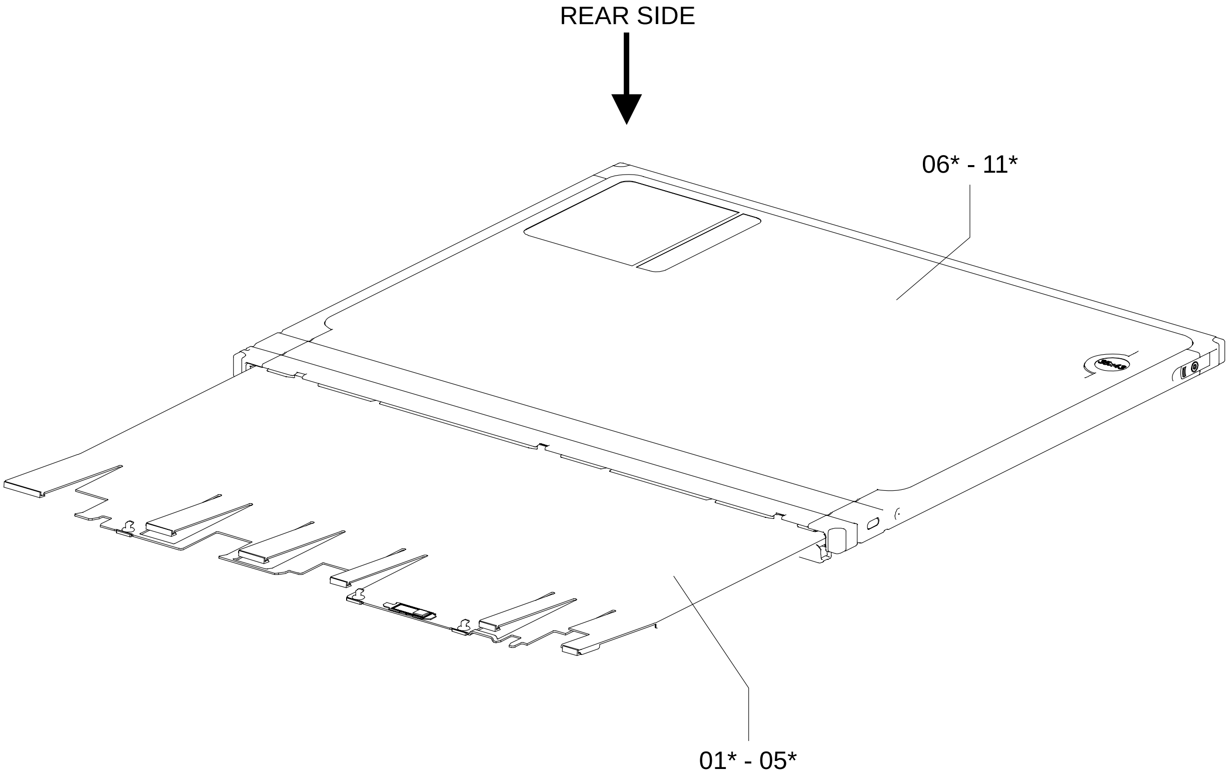

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Pos. Nr. Item no. Pos. no.	Teile-Nr. Part No. Nr. de Ref.		Benennung Description Denomination
1	CM+9518052002	*	SCHUBLADE + IP 35X43 TRAY + IP 35X43 TIROIR + IP 35X43
2	CM+9518152001	*	SCHUBLADE + IP 35X35 TRAY + IP 35X35 TIROIR + IP 35X35
3	CM+9518252002	*	SCHUBLADE + IP 24X30 TRAY + IP 24X30 TIROIR + IP 24X30
4	CM+9518352002	*	SCHUBLADE + IP 18X24 TRAY + IP 18X24 TIROIR + IP 18X24
5	CM+9518452002	*	SCHUBLADE + IP 15X30 TRAY + IP 15X30 TIROIR + IP 15X30
6	CM+9518053002	*	LEERKASSETTE 35X43 BLANK CASSETTE 35X43 CASSETTE BLANC 35X43
7	CM+9518153000	*	LEERKASSETTE 35X35 BLANK CASSETTE 35X35 CASSETTE BLANC 35X35
8	CM+9518253002	*	LEERKASSETTE 24X30 BLANK CASSETTE 24X30 CASSETTE BLANC 24X30
9	CM+9518353002	*	LEERKASSETTE 18X24 BLANK CASSETTE 18X24 CASSETTE BLANC 18X24
10	CM+9518453002	*	LEERKASSETTE 15X30 BLANK CASSETTE 15X30 CASSETTE BLANC 15X30
11	CM+9518012201	*	CR-30 FLFS KASSETTE CR-30 FLFS CASSETTE CASSETTE CR-30 FLFS

☐ = Assembly
* = Spare part standardly is not kept in stock, extended delivery time is possible.
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RF+: Refurbished Spare Parts

CASSETTE CR MD 4.0 T

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Type Overview

This spare parts list is valid for the following machine type(s):

Device Name	Type Number	Specification
CR 30-X	5175/0100	ETDPS
Digitizer (WhiteLabel)	5175/0110	EXF1O
CR 30-x	5175/0105	5QVN4
DIGITIZER 5175/120	5175/0120	5QVO6
DIGITIZER 5175/125	5175/0125	5QVP8

Accessory Overview

Following accesssories are separately available:

Accessory	Order Number
TABLE FOR CR30-X	EWRP3
ALL IN ONE CART	E2M3H
CR MOBILE KIT	EBYO1

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Chapter 8

Manufacturing Standard Modifications

Document No: DD+DIS147.08E

CR 30-X

Type 5175 /100/110

► Purpose of this Document

This document provides an overview of all product modifications which are of importance for Service. They are listed in chronological sequence.

► Document History

Edition. Revision	Release Date	Changes:
1.0	05-2008	Initial Release

► Referenced Documents

Document	Title
n.a.	n.a.

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► Manufacturer

Agfa HealthCare N.V.

Publisher

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Germany

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

OVERVIEW OF MODIFICATIONS:

Timeline	Modification	Referenced Documents
2008		
April	Introduction Software CRE_1509	Service Bulletin # 23, DD+DIS063.08E
April	All-in-One Cart available	Service Bulletin # 24, DD+DIS110.08E
2007		
November	Introduction Software CRE_1405	Service Bulletin # 20, DD+DIS329.07E
September	Change of Manufacturer of internal FireWire Cable	Service Bulletin # 19, DD+DIS301.07E
August	Introduction Software Patch CRE_1309A	Service Bulletin # 18, DD+DIS304.07E
May	Introduction Software CRE_1309	Service Bulletin # 13, DD+DIS158.07E
May	Modified Calibration Board	Service Bulletin # 12, DD+DIS148.07E
May	Small Parts Kit as part of Digitizer Delivery	Spare Parts List CR 30-X, DD+DIS325.06M, Rev. 2
May	Introduction of Transport Unit with modified lower front Roller	Service Bulletin # 12, DD+DIS148.07E
May	CD with Limit Pattern is Part of Delivery	Chapter 1, Controls, Connectors and Setup Procedure, DD+DIS150.06E Rev. 1
May	Introduction of Distance Holder in the Rear	Service Bulletin # 12, DD+DIS148.07E
March	Change of FireWire Cabling inside Digitizer	Service Bulletin # 12, DD+DIS148.07E
March	Modified Locking Pin of Cassette Locking Unit	Service Bulletin # 12, DD+DIS148.07E
March	Modified FireWire Connector in the Rear	Service Bulletin # 11, DD+DIS101.07E
March	Modified segmented Transport roller and Added Erasure Unit Guide Plate	Service Bulletin # 12, DD+DIS148.07E
March	Modified Safety Brackets for Prescan Roller	Service Bulletin # 12, DD+DIS148.07E

Timeline	**Modification**	**Referenced Documents**
March	Added Ground Connection for Front Cover	Service Bulletin # 12, DD+DIS148.07E
February	Introduction of Software Patch CRE_1206D	Service Bulletin # 06, DD+DIS027.07E
2006		
December	Introduction of Software Patch CRE_1206C	Service Bulletin # 05, DD+DIS001.07E
October	Added Post Scan Brush	Service Bulletin # 08, DD+DIS397.06E

1 Introduction of Software Patch CRE_1206C

Reason	To prevent too high displayed LgM-Values.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1170 plus 1089, 1125, 1140, 1148, 1153, 1158, 1162, 1163, 1164, 1165, 1166, 1167, 1168,
Part Number(s)	Not available via spare part channel, only via GSO library.	
Referenced Document(s)	Service Bulletin # 05, DD+DIS001.07E	

2 Introduction of Software Patch CRE_1206D

Reason	To prevent interfering noise in the image.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1366 plus 1187, 1260, 1261, 1263, 1338, 1355, 1357, 1363,
Part Number(s)	Not available via spare part channel, only via GSO library.	
Referenced Document(s)	Service Bulletin # 06, DD+DIS027.07E	

3 Added Post Scan Brush

Reason	Improvement of ESD (electrostatic discharge) behaviour of the digitiser when the image plate is in the post scan area.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1048 plus 1035, 1039, 1041, 1042, 1043, 1044, 1045, 1046,
Part Number(s)	Postscan ESD Brush Kit: CM+ 9 5175 9080 0	
Referenced Document(s)	Service Bulletin # 08, DD+DIS397.06E	

4 Added Ground Connection for Front Cover

Reason	Improvement of overall ESD (electrostatic discharge) behaviour of the digitiser.
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 1610
Part Number(s)	Not available as spare part, only available as part of Service Kit CM+9 5175 9130 0.
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E

5 Modified Safety Brackets for Prescan Roller

Reason	To prvent that prescan rollers fall off during transport.
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 1633
Part Number(s)	Not available as spare part, only available as part of Service Kit CM+9 5175 9130 0.
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E

6 Modified segmented Transport roller and Added Erasure Unit Guide Plate

Reason	Improvement of IP run reliability.
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 1568 plus 1495
Part Number(s)	Not available as spare part, only available as part of Service Kit CM+9 5175 9130 0.
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E

7 Modified FireWire Connector in the Rear

Reason	To prevent inserting the FireWire Connector the wrong way.
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 1532
Part Number(s)	Not available as spare part: Production mounted a cable tie around the connector.
Referenced Document(s)	Service Bulletin # 11, DD+DIS101.07E

8 Modified Locking Pin of Cassette Locking Unit

Reason	Improvement of reliability for opening and closing of the cassette.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1634 plus 1595, 1610, 1626
Part Number(s)	Not available as spare part, only available as part of Service Kit CM+9 5175 9130 0.	
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E	

9 Introduction of Distance Holder in the Rear

Reason	To prevent that FireWire cable can be damaged by pushing the digitiser too close to the wall.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1813 plus 1668, 1679, 1692, 1721, 1726, 1730, 1731, 1745, 1750, 1753, 1770, 1779, 1780, 1786, 1790, 1793, 1795, 1799, 1800, 1802, 1804, 1809, 1812.
Part Number(s)	Not available as spare part, only available as part of Service Kit CM+9 5175 9130 0.	
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E	

10 Change of FireWire Cabling inside Digitizer

Reason	Reduction of possible disturbances of of BOL (Begin of line) and EOL (End of Line) signal.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1701
Part Number(s)	Not available as spare part – just a different path of the FireWire cable.	
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E	

11 CD with Limit Pattern is Part of Delivery

Reason	Checking image quality after installation.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1816 plus 1668, 1679, 1692, 1721, 1726, 1730, 1731, 1745, 1750, 1753, 1770, 1779, 1780, 1786, 1790, 1793, 1795, 1799, 1800, 1802, 1804, 1809, 1812, 1813, 1814.
Part Number(s)	Not available as spare part, only available on CD which is part of delivery. Part of Service Kit CM+9 5175 9130 0.	
Referenced Document(s)	Chapter 1, Controls, Connectors and Setup Procedure, DD+DIS150.06E Rev. 1	

12 Introduction of Transport Unit with modified lower front Roller

Reason	Improvement of image plate run.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1814 plus 1668, 1679, 1692, 1721, 1726, 1730, 1731, 1745, 1750, 1753, 1770, 1779, 1780, 1786, 1790, 1793, 1795, 1799, 1800, 1802, 1804, 1809, 1812, 1813,
Part Number(s)	CM+9 5175 6100 4. Part of service kit CM+9 5175 9130 0.	
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E	

13 Small Parts Kit as part of Digitizer Delivery

Reason	To have small parts kit (Screws, nuts, fuses) available in the field.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1816 plus 1668, 1679, 1692, 1721, 1726, 1730, 1731, 1745, 1750, 1753, 1770, 1779, 1780, 1786, 1790, 1793, 1795, 1799, 1800, 1802, 1804, 1809, 1812, 1813, 1814.
Part Number(s)	Small parts kit CM+9 5175 9070 1	
Referenced Document(s)	Spare Parts List CR 30-X, DD+DIS325.06M, Rev. 2	

14 Modified Calibration Board

Reason	Prevention of electrostatic discharge during scan.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1816, plus 1668, 1679, 1692, 1721, 1726, 1730, 1731, 1745, 1750, 1753, 1770, 1779, 1780, 1786, 1790, 1793, 1795, 1799, 1800, 1802, 1804, 1809, 1812, 1813, 1814,
Part Number(s)	CM+8.5175.2470.2	
Referenced Document(s)	Service Bulletin # 12, DD+DIS148.07E	

15 Introduction Software CRE_1309

Reason	Improvement of IP Handling and Communication with NX.	
Product(s) & Serial Number(s)	Digitizer type 5175/100:	SN ≥ 1816 plus 1668, 1679, 1692, 1721, 1726, 1730, 1731, 1745, 1750, 1753, 1770, 1779, 1780, 1786, 1790, 1793, 1795, 1799, 1800, 1802, 1804, 1809, 1812, 1813, 1814
Part Number(s)	Software CRE_1309 is part of service kit CM+9 5175 9130 0 (See CR 30-X Service Bulletin No. 12). It is also available via MEDNET, GSO Library	
Referenced Document(s)	Service Bulletin # 13, DD+DIS158.07E	

16 Introduction Software Patch CRE_1309A

Reason	Bugfix: Solution for sporadic error codes 10754, 10761 or 10767 that may appear with machines that were upgraded from CRE_1206X to CRE_1309 in the field.
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 2292 plus 2268
Part Number(s)	Not available via spare part channel, only via GSO library.
Referenced Document(s)	Service Bulletin # 18, DD+DIS304.07E

17 Change of Manufacturer of internal FireWire Cable

Reason	Change of manufacturer of internal FireWire Cable.
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 2301
Part Number(s)	CM+9 0477 1087 X
Referenced Document(s)	Service Bulletin # 19, DD+DIS301.07E

18 Introduction Software CRE_1405

Reason	• Improved Full Leg / Full Spine (FLFS) functionality. • Support of new digitizer type 5175/110
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 2730 Digitizer type 5175/110: SN ≥ 6001
Part Number(s)	Not available via spare part channel, only via GSO library.
Referenced Document(s)	Service Bulletin # 20, DD+DIS329.07E

19 All-in-One Cart available

Reason	Cart allows integration of digitizer, NX processing station and UPS.
Product(s) & Serial Number(s)	Optional for digitizers 5175/100 and 5175/110 Available as of April 2008
Part Number(s)	ABC-Code new: E2M3H
Referenced Document(s)	Service Bulletin # 24, DD+DIS110.08E

20 Introduction Software CRE_1509

Reason	New functions: • Supports PMI boards as well as the new PMI2 boards. • Has a mechanism implemented to allow selection of type of replacement for spare parts with an E-Label. Type of replacement is either complete module or printed circuit board only.
Product(s) & Serial Number(s)	Digitizer type 5175/100: SN ≥ 3626 Digitizer type 5175/110: SN ≥ 6132
Part Number(s)	Not available via spare part channel, only via GSO library.
Referenced Document(s)	Service Bulletin # 23, DD+DIS063.08E

HEALTHCARE
Imaging Services

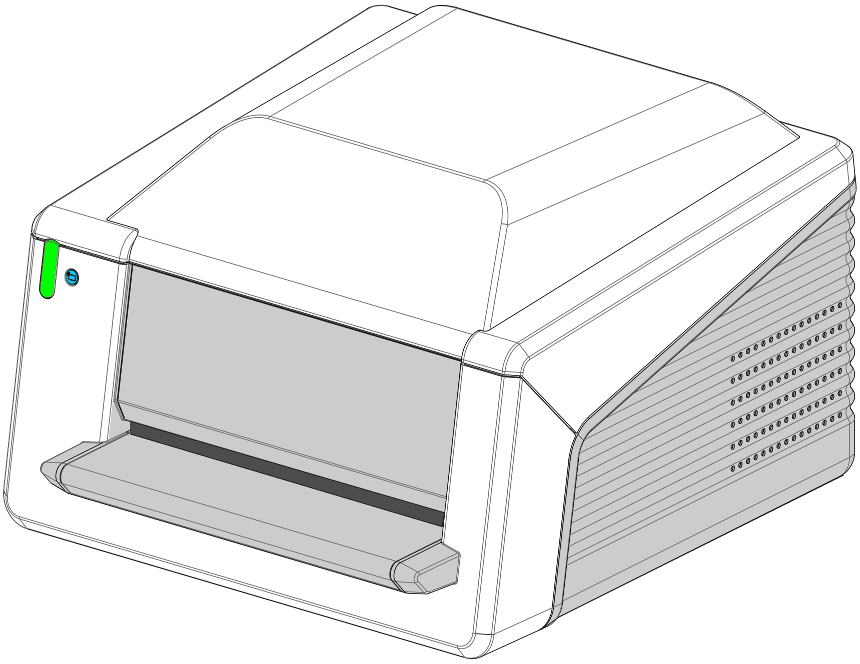
Chapter 9

Maintenance

Document No: DD+DIS171.06E

CR 30-X

Type 5175 / 100/110



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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

Purpose of this Document

This document contains all routines and tests to be carried out during maintenance.

It describes all must maintenance periodical steps in chronological suitable order.

Document History

Edition. Revision	Release Date	Changes compared to previous Version 1.0
1.1	01-2009	• Removed E-Label analysis, as this is part of infocounter analysis. • Added image quality check before maintenance. See section 2.6. • Added visual inspection of cables at left hand side cassette unit. See section 3.1. • Added visual inspection of Teflon tape for cassette fixation steel band. See section 3.4. • Added greasing of the spindle of the cassette fixation unit. See section 3.5. • Removed cleaning of image plates, as this is a customer task. • Added stall calibration for all motors. See section 4.1.

Referenced Documents

Document	Title
DD+DIS150.06E	CR 30-X Service Manual

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1 General Information on Preventive Maintenance

To ensure quality and functional reliability of the system all the points listed below (minimum maintenance points) must be carried out.

IMPORTANT:

Check if it is necessary to include country specific regulations as additional maintenance points.

NOTE:

Always have the latest digitizer software together with the associated NX workstation software available on the Service PC. It can be downloaded from MEDNET, GSO Library.

If the latest digitizer software version is not installed, consider a software upgrade of the digitizer.

However always check, if it is compatible to the installed NX workstation software. It may be required to upgrade the NX workstation software, too.
For details refer to section 2 of the digitizer service manual, appendix: Software / Hardware Compatibility Chart.

1.1 Maintenance Frequency

The maintenance has to be carried out:

- **every 12.000 image plate cycles**

  or

- **once a year**

1.2 Required Time

REQUIRED TIME:
approximately 2 hours

1.3 Required Tools

Description	Spare Part number*
Cu filter (for exposure of test images)	CM+9 5155 1015 2
Flashlight	Commercially available
Limit pattern CD-ROM	CM+9 5175 9160 0 (CD ROM is also part of delivery)
Hex key 3 mm	Commercially available

1.4 Required Cleaning Material

In addition to the standard equipment the following cleaning substances are required:

Description	Spare part number*
Vacuum cleaner (220/240V, 50Hz)	CM+9 9999 0895 0 or commercially available
Dirt bags for vacuum cleaner (10 x)	CM+9 9999 0896 0
ADC screen cleaner (4 bottles)	CM+9.9999.9288.0 or sales order code EQP6D
Canned Air	commercially available
Lint-free cloth	commercially available

1.5 Required Lubrication Material

Description	Spare part number*
Isoflex Topas NB52 (50 ml)	CM+9 9999 9247 0

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

1.6 Required Spare Parts

Following spare parts are required in certain cases for preventive replacements:

Description	Spare part number*
Side plate transport unit (left hand side)	CM+9 5175 9890 0
Cassette fixation steel band	CM+9 5175 5830 1

* The last digit in the spare part number indicates the spare part revision at release of this document. When ordering, the actual revision of the spare part is delivered.

✓ NOTE:

Replacing the parts mentioned above is required in exceptional cases only.
For details refer to sections 3.1 and 3.4.

2 Diagnostics

2.1 Questioning of the Customer

(1) Ask the customer for any problem that appeared since the last maintenance.

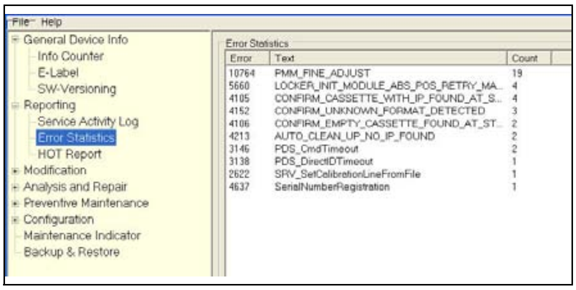
2.2 Checking Images on the Workstation

(1) Check the last 20 to 40 images on the workstation, to see if image quality problems occurred.

2.3 Checking the Error Statistics

(1) On the NX workstation select: "Start → Programs → CR30-X Service Client → Reporting → Error Statistics"

(2) Check the occurred errors.


File
Help
General Device Info
Info Counter
E-Label
SW-Versioning
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
Analysis and Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore

Error Statistics

Error	Text	Count
10764	PMM_FINE_ADJUST	19
5660	LOCKER_INIT_MODULE_ABS_POS_RETRY_MA...	4
4105	CONFIRM_CASSETTE_WITH_IP_FOUND_AT_S...	4
4152	CONFIRM_UNKNOWN_FORMAT_DETECTED	3
4106	CONFIRM_EMPTY_CASSETTE_FOUND_AT_ST...	2
4213	AUTO_CLEAN_UP_NO_IP_FOUND	2
3146	PDS_CmdTimeout	2
3138	PDS_DirectIDTimeout	1
2622	SRV_SetCalibrationLineFromFile	1
4637	SerialNumberRegistration	1

Figure 1

2.4 Info Counter Analysis

(1) In the CR30-X Service Client select "General Device Info → Info Counter".

(2) Select node "Entire Device".

(3) Select tab "Values" and check the different entries.

(4) Select tab "Counters" and check the different entries.

(5) Select tab "Lists" and check the different entries.

(6) Click on the errors displayed in the "Lists" tab to check the timestamp: This shows, when the error occurred.

(7) Check, whether one of these errors is sporadic and can be solved via software upgrade, cleaning or a replacement.

2.5 Reset of the Relative Counters

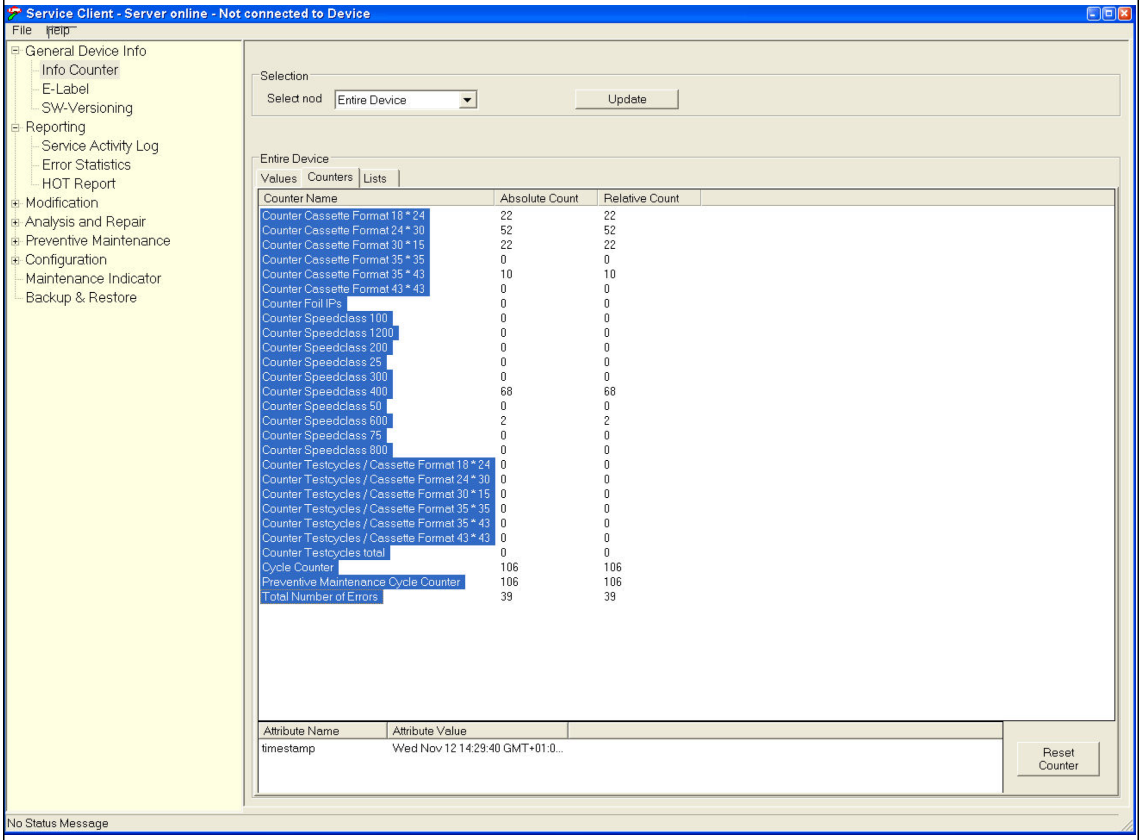
(1) In the Infocounter select the node "Entire device".

(2) Select tab “Counters”.

(3) Select all events (select upper most event, then select lowest event with the shift key pressed).

(4) Select "Reset Counter".

(5) Repeat steps 3 and 4 for all other nodes.


Service Client - Server online - Not connected to Device
File
Help
General Device Info
Info Counter
E-Label
SW-Versioning
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
Analysis and Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Selection
Update
Entire Device
Values
Counters
Lists
Reset Counter
No Status Message

Select nod: Entire Device

Counter Name	Absolute Count	Relative Count
Counter Cassette Format 18 * 24	22	22
Counter Cassette Format 24 * 30	52	52
Counter Cassette Format 30 * 15	22	22
Counter Cassette Format 35 * 35	0	0
Counter Cassette Format 35 * 43	10	10
Counter Cassette Format 43 * 43	0	0
Counter Foil IPs	0	0
Counter Speedclass 100	0	0
Counter Speedclass 1200	0	0
Counter Speedclass 200	0	0
Counter Speedclass 25	0	0
Counter Speedclass 300	0	0
Counter Speedclass 400	68	68
Counter Speedclass 50	0	0
Counter Speedclass 600	2	2
Counter Speedclass 75	0	0
Counter Speedclass 800	0	0
Counter Testcycles / Cassette Format 18 * 24	0	0
Counter Testcycles / Cassette Format 24 * 30	0	0
Counter Testcycles / Cassette Format 30 * 15	0	0
Counter Testcycles / Cassette Format 35 * 35	0	0
Counter Testcycles / Cassette Format 35 * 43	0	0
Counter Testcycles / Cassette Format 43 * 43	0	0
Counter Testcycles total	0	0
Cycle Counter	106	106
Preventive Maintenance Cycle Counter	106	106
Total Number of Errors	39	39

Attribute Name	Attribute Value
timestamp	Wed Nov 12 14:29:40 GMT+01:0...

Figure 2

2.6 Checking current Image Quality

REQUIRED TOOLS:

- Lint free cloth
- ADC screen cleaner
- Cu filter

(1) Select the largest available cassette.
If possible, use a 35x43 cm Genrad cassette.
If in size 35x43 cm FLFS (Full Leg / Full Spine) cassettes are available only, use a FLFS cassette.

NOTE:
FLFS cassettes can be recognized by a sticker on the cassettes.

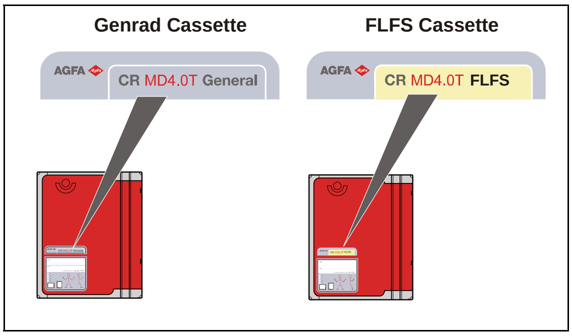


Figure 3

(2) At the digitizer select the “Erase key”.

(3) Insert the selected cassette: The status LED is blue flashing.

(4) When finished (status LED changes to green), remove the cassette.

(5) Open the cassette using a key or a pen.

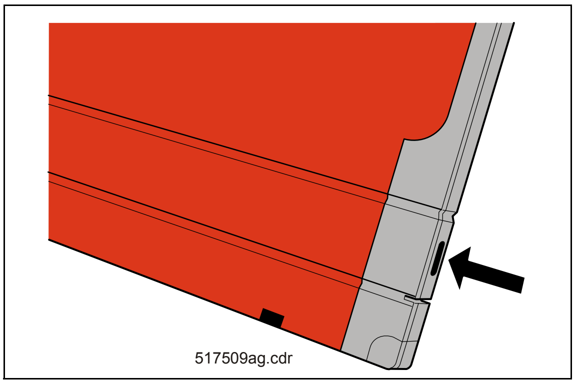


Figure 4

(6) Check the image plate for dirt or scratches.
If dirt is visible, clean the image plate with ADC screen cleaner and a soft lint-free cloth.

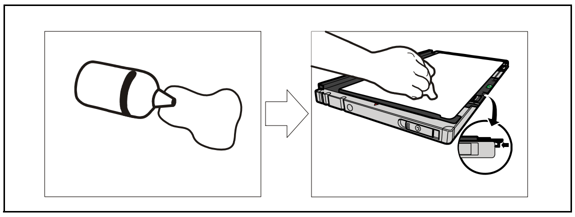


Figure 5

IMPORTANT:

After cleaning, wait for about 10 minutes to allow the solvents to evaporate.

(7) Put the tray with the image plate back into the cassette.

(8) Verify that the white phosphor side is oriented to the black tube side of the cassette and that the shutter does not scratch the image plate.

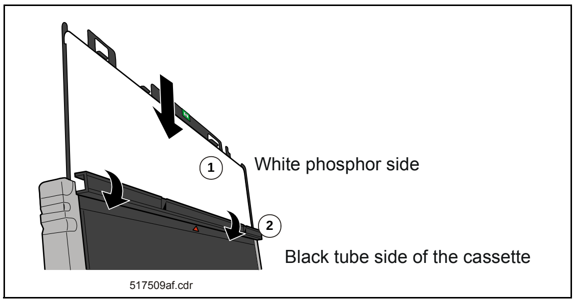

①
White phosphor side
②
Black tube side of the cassette
517509af.cdr

Figure 6

(9) Mount the Cu filter at the modality.

(10) Place the cassette in parallel to the rotating anode.

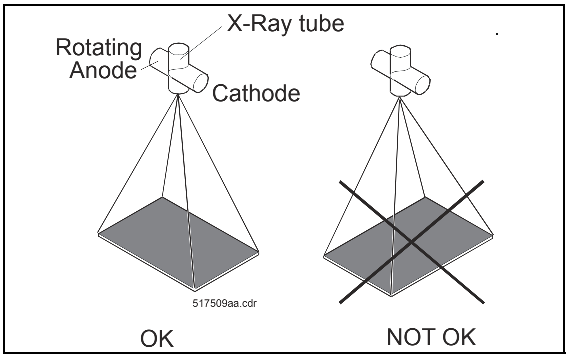

X-Ray tube
Rotating Anode
Cathode
517509aa.cdr
OK
NOT OK

Figure 7

(11) Expose the cassette with 10 µGy.

NOTE:

Select the following exposure parameters using a 1.5 mm Cu filter to obtain a dose of 10 µGy:

- 12 mAs
- 75 kVp
- 1.3 m (51,2”) distance and
- large focus.

The values are approximate and may vary among the X-ray devices.

(12) Turn the cassette by 180°.

(13) Again expose with 10 µGy.

(14) Remove the CU filter from the modality.

(15) Insert the exposed cassette in the digitizer.

(16) At the NX workstation select exam type "System Diagnosis - Flatfield".

IMPORTANT:

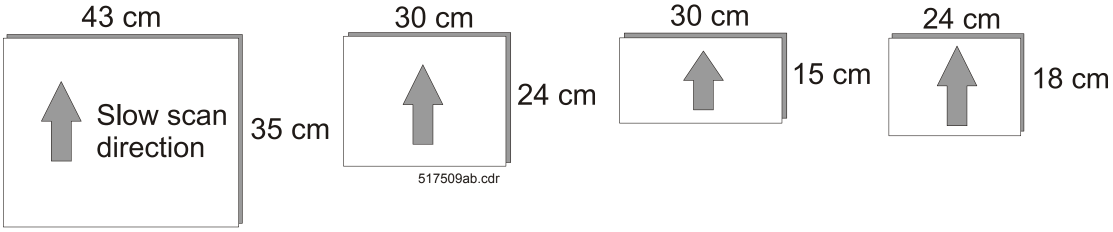
By selection of examination type "System Diagnosis - Flatfield", the correct settings for image processing of the flatfield are used. Any other examination type may give a result which cannot be used for image evaluation (wrong “MUSICA” settings).

(17) Select button "ID" at the NX workstation: Scanning starts.

(18) Print the image or send it to the archive (depending on what is available).

(19) At the lightbox or the diagnostic monitor check the image for stripes in slow scan direction and spot artifacts.

NOTE:
The slow scan direction is always the long side of the image plate.



Evaluation:

Symptom	**Possible reason**	**Procedure**
Stripes in slow scan direction	Dust on the light collector	Cleaning of the scan line is required. This is done during step “3.6 Cleaning of the Scan Line”.
Spot artifacts	Dirt on the scan rollers	ibly the scan rollers have to be cleaned. This is checked during step “3.7, Cleaning of the lower Scan Rollers”.

(20) Store the cassette aside: It is used once more for image quality check after maintenance.

(21) Keep the image for comparison after maintenance.

3 Maintenance – Power Off

3.1 Visual Inspection

REQUIRED TOOLS:

- Flashlight
- Hex key 3 mm

(1) Switch off the digitizer.

(2) Unplug the mains cable at the digitizer.

(3) Check overall condition of the device for obvious changes or damage.

(4) Check the condition of the power and FireWire cable.

(5) Open cassette unit.

(6) Remove top cover.

(7) Remove front cover.

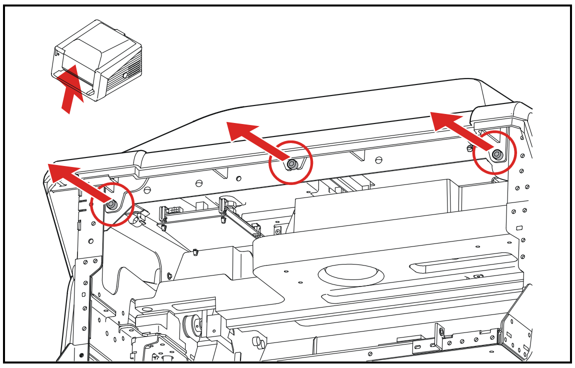


Figure 8: Removing the top cover

(8) Check the condition of the cables inside the digitizer, especially in the area of the cassette unit.

(9) If a wear of the cassette unit wire harness can be observed (see arrow):
Replace the side plate by “Side Plate Transport Unit (left hand side)”.
Spare part number see section 1.6.

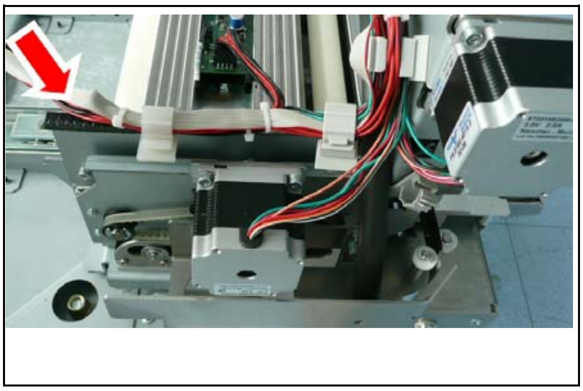


Figure 9:
Cassette side plate with straight edge (old design)

IMPORTANT:

For digitizers which still have the old side plate with straight edge installed:
It is recommended to replace the side plate by the "Side Plate Transport Unit (left hand side)" preventively.

Spare part number see section 1.6.
Installation instructions are part of delivery of the spare part.

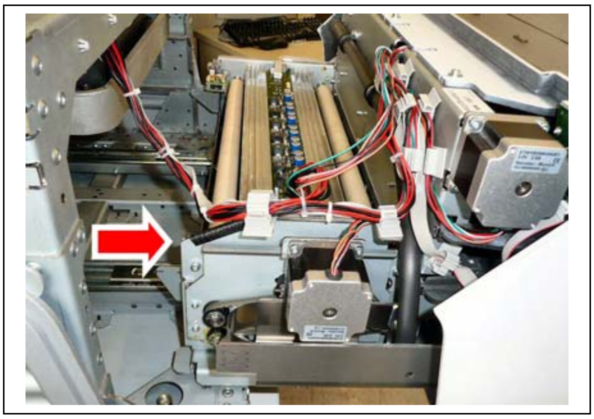


Figure 10:
Cassette side plate with sloped rear edge (new design)

(10) Remove screw at erasure unit.

(11) Disconnect two cables at erasure unit.

(12) Take out erasure unit.

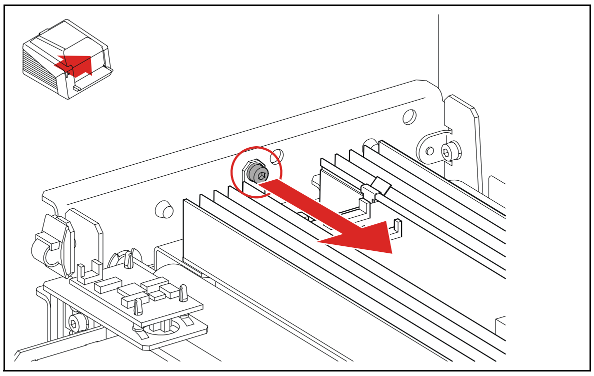


Figure 11

CAUTION:

IP jams possible if IP guide plate is deformed.

Do not bend IP guide plate at removal.

(13) Slide IP guide plate to the left and lift it out.

(14) Check condition of the 4 belts in the cassette unit.

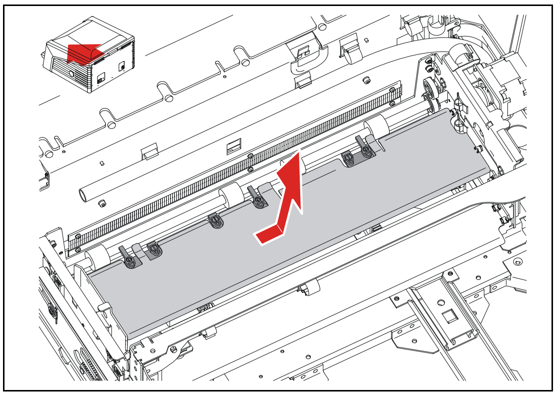


Figure 12

3.2 Cleaning General

REQUIRED TOOLS:

Vacuum cleaner

(1) Clean the inside of the digitizer with a vacuum cleaner.
Especially check for loose dust in transport unit, and clean this thoroughly with the vacuum cleaner.

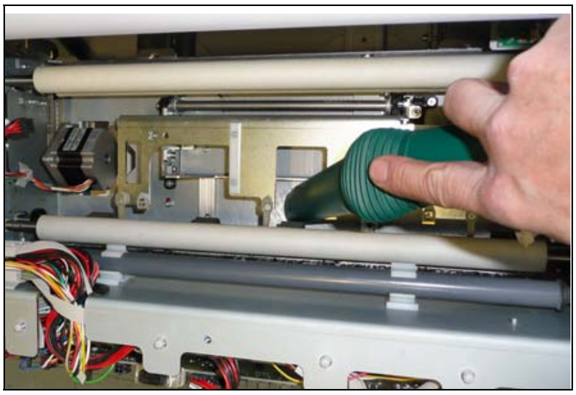


Figure 13

3.3 Cleaning of the Erasure Unit

REQUIRED TOOLS:

Lint free cloth

(1) Check the reflector, i.e. the lower side of the erasure unit.
Remove dirt or dust with a lint free cloth.

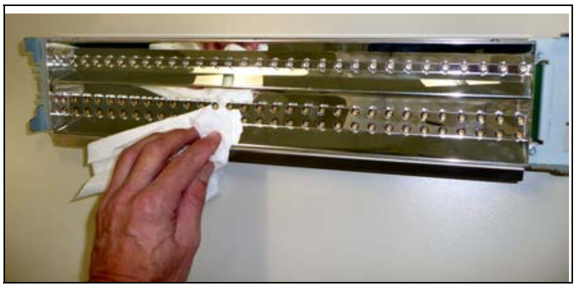


Figure 14

3.4 Checking the Teflon Tape and Cassette Fixation Steel Band at the Cassette Unit

✓ Note:

The Teflon tape is only installed in digitizers manufactured till October 2008.

(1) Check the condition of the Teflon tape and the cassette fixation steel band in the cassette unit:

- The Teflon tape may not show any signs of wear.
- The cassette fixation steel band may not show any bend or sticking part coming from the Teflon tape.

(2) If one of the parts is not in perfect condition:

- Replace the Teflon tape by the slide bar, which is part of delivery of the “Cassette Fixation Steel Band”, spare part number: CM+9 5175 5830 1
  For details see instructions which are part of delivery of the spare part.
- Clean the steel band with alcohol or replace it if is bent.

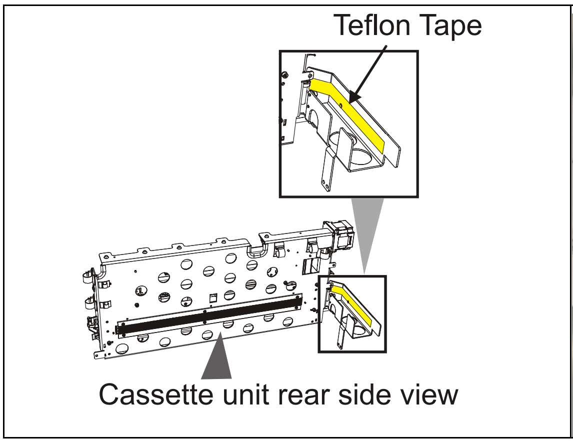


Figure 15: Teflon tape

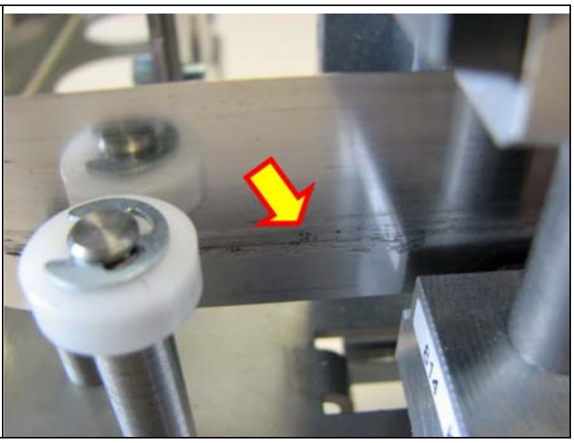


Figure 16: Sticking parts at the cassette fixation steel band

(2) For machines with a slide bar installed: Check the condition of the slide bar (see arrow). Replace if worn.

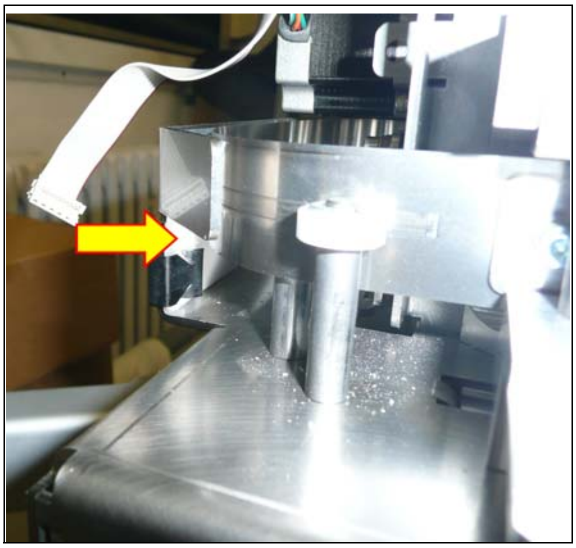


Figure 17

NOTE:

The slide bar is part of delivery of the “Cassette Fixation Steel Band”, spare part number see section 1.6.

It is installed in digitizers manufactured as of October 2008. It can easily be recognized by 2 clamps at the left side of the cassette unit.

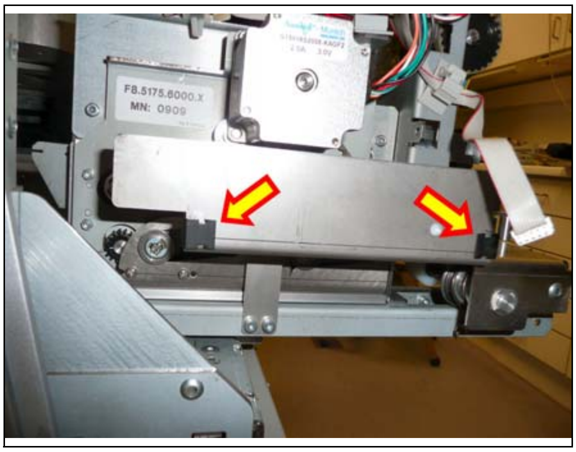


Figure 18

3.5 Greasing the Spindle at the Cassette Fixation Unit

(1) Put some grease (Isoflex Topas NB 52; part number see section 1.5) at the spindle in the area of the spindle nut. See arrows.

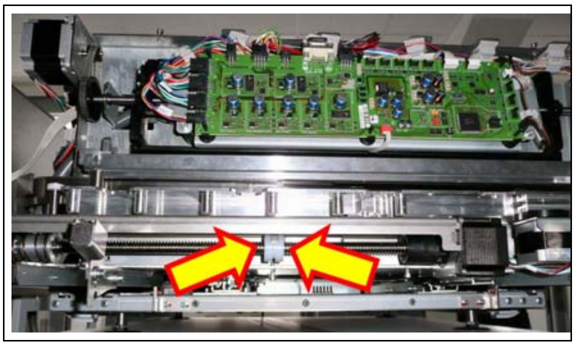


Figure 19

3.6 Cleaning of the Scan Line

IMPORTANT:

Only clean the scan line, if vertical stripes are visible in the image made under step 2.6, Checking current Image Quality.

Otherwise skip this step.

REQUIRED TOOLS:

Cleaning brush (attached to the digitizer "Cassette Unit")

(1) Clean the scan line by wiping with the cleaning brush a few times over the whole scan length.
The last movement must be continuous from rear to front.

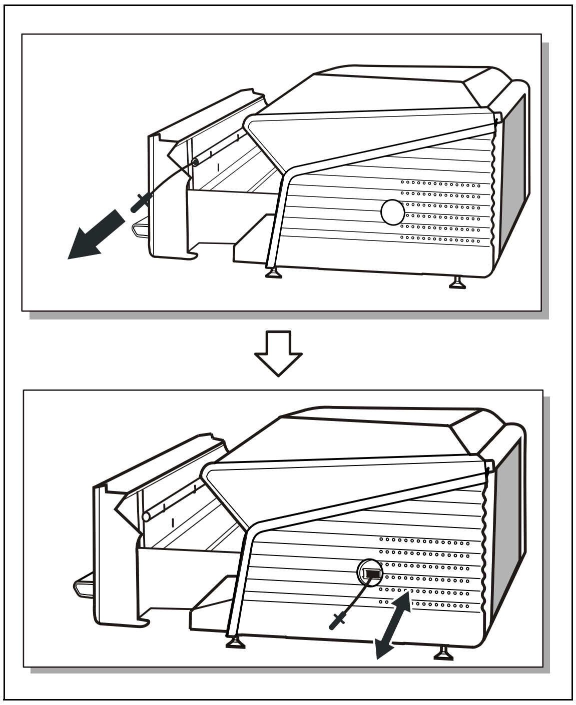


Figure 20

3.7 Cleaning of the lower Scan Rollers

IMPORTANT:

Spot artifacts may be caused by a dirty scan roller, which transfers the dirt particles during scan to the image plate.

Therefore, only clean the scan rollers, if sport artifacts are visible in the image made under step 2.6.

Otherwise skip this step and re-mount all covers.

REQUIRED TOOLS:

- Lint free cloth
- ADC screen cleaner
- Hex key 3 mm and 5 mm

IMPORTANT:

Do not clean the upper rollers: They do not require any cleaning.

(1) Remove the left and right side covers.

(2) Remove the rear cover.

(3) Remove the guide plate before the pre-scan rollers (2 screws left and right see arrows).

(4) Clean the lower pre-scan roller with a lint free cloth lightly soaked with CR screen cleaner.
Turn the clutch at the slow scan unit to turn the rollers.
Pushing the clutch approx. 60 times gives one roller rotation.

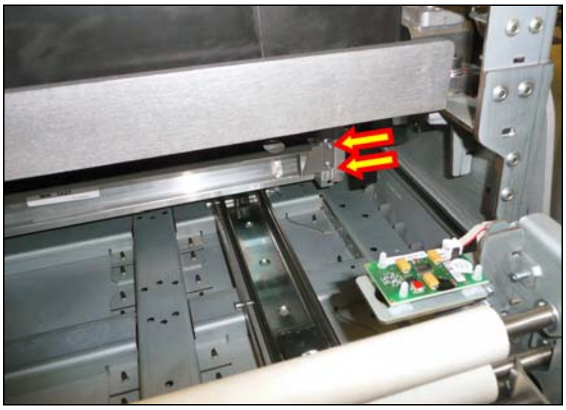


Figure 21

DOCUMENT CONTROL NOTE:
The controlled version of this document resides on MedNet. Any printed copy of this document is uncontrolled.

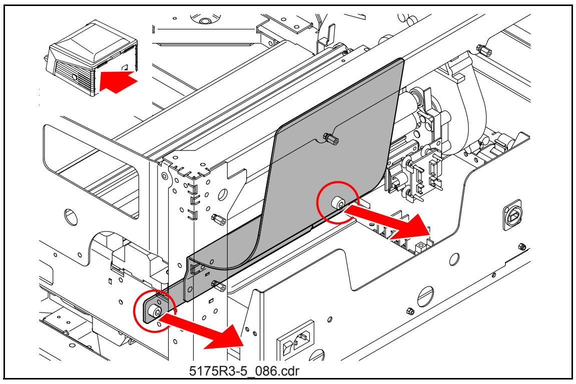


Figure 22

(5) Remove the rear film guide.

(6) Clean the lower postscan roller with a lint free cloth lightly soaked with CR screen cleaner.
Turn the clutch at the slow scan unit to turn the rollers.
Pushing the clutch approx. 60 times gives one roller rotation.

(7) Re-mount the guide plates at the pre-scan and posts scan side.

(8) Re-mount all covers.

(9) Connect the mains cable.

3.8 Checking of Cassette Condition

(1) Check the following items of the cassettes:
- outside condition
- shutter
- obvious damage due to drop of cassette

(2) Keep damaged or defective cassettes for the customer conversation at the end of the preventive maintenance.

4 Maintenance – Power on

4.1 Performing Stall Calibration for all Motors

(1) Switch on the digitizer.

(2) Start the CR 30-X Service Client.

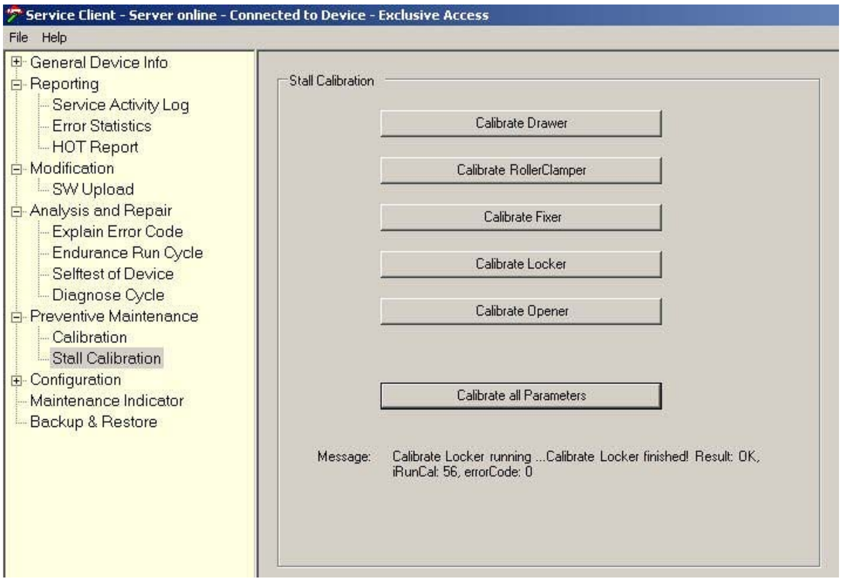
(3) Enter username and password.

(4) Select "Preventive Maintenance - Stall Calibration".

(5) Select "Calibrate all Parameters".

(6) Wait till the stall calibration is finished: Takes approx. 5 minutes.

(7) For software < CRE_1309: Switch off/on the digitizer.
For software ≥ CRE_1309 to switch off/on the digitizer is not required.


Service Client - Server online - Connected to Device - Exclusive Access
File Help
General Device Info
Reporting
Service Activity Log
Error Statistics
HOT Report
Modification
SW Upload
Analysis and Repair
Explain Error Code
Endurance Run Cycle
Selftest of Device
Diagnose Cycle
Preventive Maintenance
Calibration
Stall Calibration
Configuration
Maintenance Indicator
Backup & Restore
Stall Calibration
Calibrate Drawer
Calibrate RollerClamper
Calibrate Fixer
Calibrate Locker
Calibrate Opener
Calibrate all Parameters

Message: Calibrate Locker running ...Calibrate Locker finished! Result: OK, iRunCal: 56, errorCode: 0

Figure 23

4.2 Check of Safety Switch

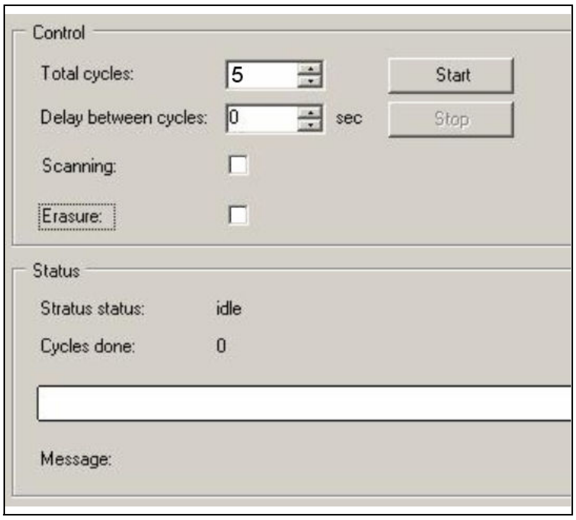
(1) Pull out the cassette unit approx. 1 cm (approx. 0.4 in.): The "cassette unit open safety switch" has to switch off the digitizer.
If the test fails, the switch has to be adjusted or it is defective.
For adjustment instructions refer to Technical Documentation chapter 3.6.
For replacement instructions refer to Technical Documentation chapter 3.5.

(2) Close the cassette unit.

4.3 Performing Test Cycles

(1) In the CR30-X service client select: Analysis & Repair → Endurance Run Cycles

(2) Carry out five test cycles with each available cassette format.



Control

Total cycles: 5

Delay between cycles: 0 sec

Scanning: ☐

Erasure: ☐

Status

Stratus status: idle

Cycles done: 0

Message:

Figure 24

4.4 Technical Image Quality Check of the System

Note:

The “Technical Image Quality Check” of the system is divided in 3 steps:

1. Creating a flatfield image
2. Checking the image quality
3. If the image quality is not OK: Comparing the flatfield with the test patterns “lowest acceptable quality”

4.4.1 Creating a Flatfield Image

(1) Take the same cassette you have used for image quality check at the beginning of the maintenance procedure.

(2) Mount the CU filter at the modality.

(3) Place the cassette in parallel to the rotating anode.

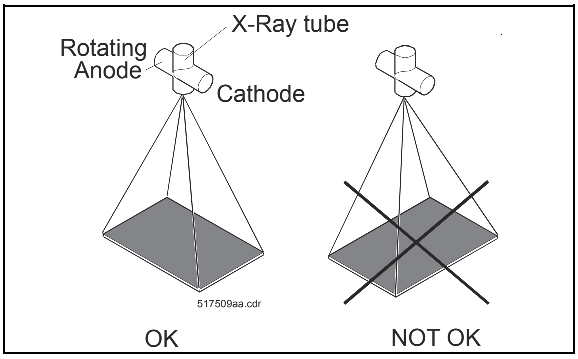


Figure 25

(4) Expose the cassette with 10 µGy.

NOTE:
Select the following exposure parameters using a 1.5 mm Cu filter (CM+9 5155 1015 2) to obtain a dose of 10 µGy:

- 12 mAs
- 75 kVp
- 1.3 m (51,2”) distance and
- large focus

The values are approximate and may vary among the X-ray devices.

(5) Turn the cassette by 180°.

(6) Expose again with 10 µGy.

(7) Remove the CU filter from the modality.

(8) Insert the exposed cassette in the digitizer.

(9) At the NX workstation select exam type "System Diagnosis - Flatfield".

IMPORTANT:
By selection of examination type "System Diagnosis - Flatfield", the correct settings for image processing of the flatfield are used. Any other examination type may give a result which cannot be compared with the limit pattern.

(10) Select button "ID" at the NX workstation: Scanning starts.

(11) Print the image or send it to the archive (depending on what is available).

4.4.2 Checking the Images at the Lightbox or Viewing Station

(1) Compare the flatfield made at the beginning of the maintenance procedure with the one made under step 4.4.1.

Evaluation:

- If the image made during step 4.4.1 visually looks as good or better than the flatfield made at the beginning of the maintenance procedure, the image quality is okay.
- If there are unacceptable effects in slow scan or fast scan direction, refer to the troubleshooting guide, DD+DIS151.08E.

(2) Check the image quality of the flatfield for absence of any stripes and large area inhomogeneities.

- If the flatfield image shows stripes in fast scan or slow scan direction or large area inhomogeneities compare the image with the limit pattern.
  See section 4.4.3.

4.4.3 Comparing the Flatfield with the Test Patterns “Lowest Acceptable Quality”

IMPORTANT:

This step is only required, if the flatfield image made under step 4.4.1 shows stripes in fast scan or slow scan direction or large area inhomogeneities.

(1) Insert the limit pattern CD-ROM (part of delivery) into the CD-ROM Drive.

(2) On the NX workstation select the Main Menu.

(3) Select “import images”.

(4) Browse to the CD-ROM drive.

(5) Select the folder of the test patterns.

(6) Select OK.

(7) Wait till the images are imported (approx. 30 seconds).

(8) Select the Examination menu.

(9) Print the image or send it to the archive (depending on what is available).

(10) At the lightbox or the viewing station visually compare the scanned flatfield with the limit pattern. The limit pattern represents the lowest acceptable image quality in slow scan and fast scan direction: Compare the stripes in “slow scan” and in “fast scan” direction”.
See also IMPORTANT note on page 27 if a FLFS cassette is used for flatfield evaluation.

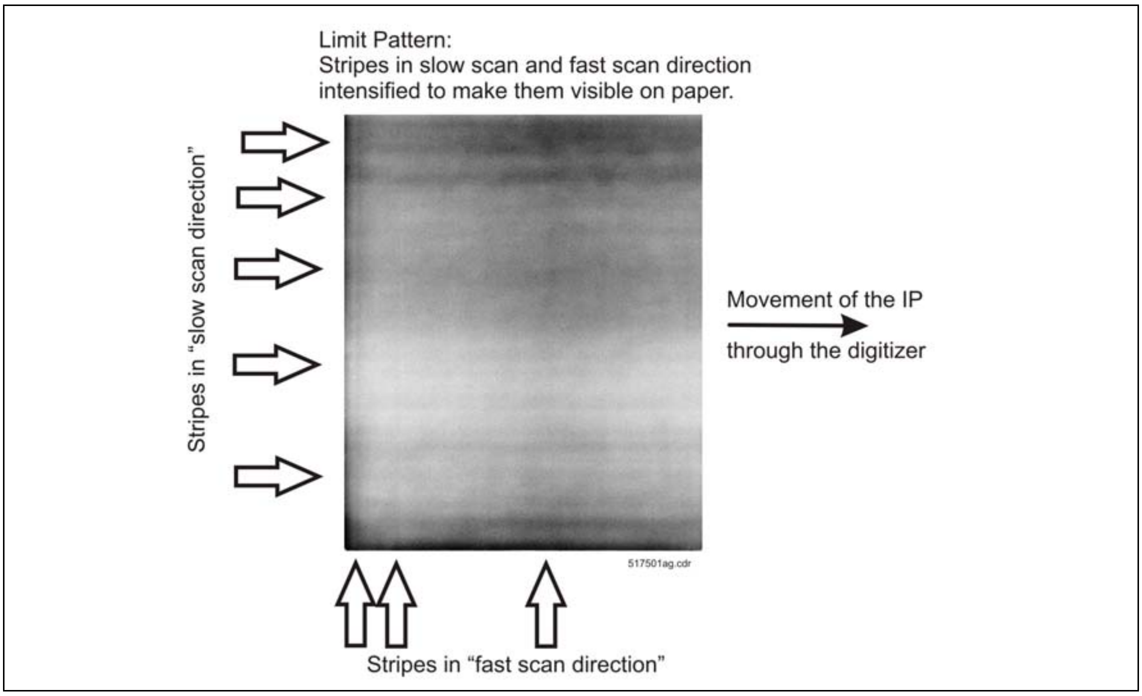

Limit Pattern:
Stripes in slow scan and fast scan direction intensified to make them visible on paper.
Stripes in "slow scan direction"
Movement of the IP through the digitizer
517501ag.cdr
Stripes in "fast scan direction"

Figure 26

Evaluation:

- If the scanned image visually looks as good or better than the limit pattern, the image quality is okay.
- If there are unacceptable effects in slow scan or fast scan direction, see the troubleshooting guide, DD+DIS151.08E.

NOTE:
The slow scan direction is always the long side of the image plate.

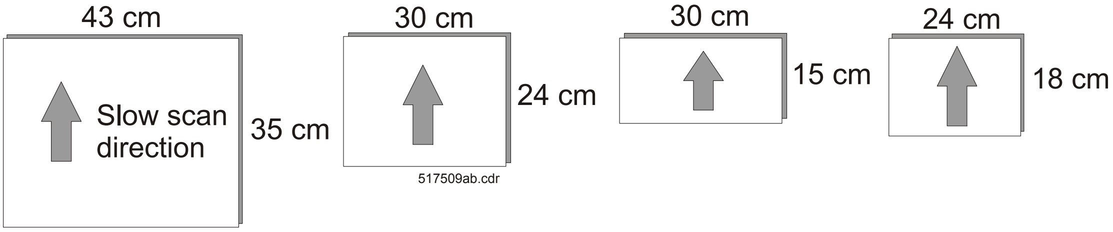

43 cm
Slow scan direction
35 cm
30 cm
24 cm
517509ab.cdr
30 cm
15 cm
24 cm
18 cm

Figure 27: Slow scan direction

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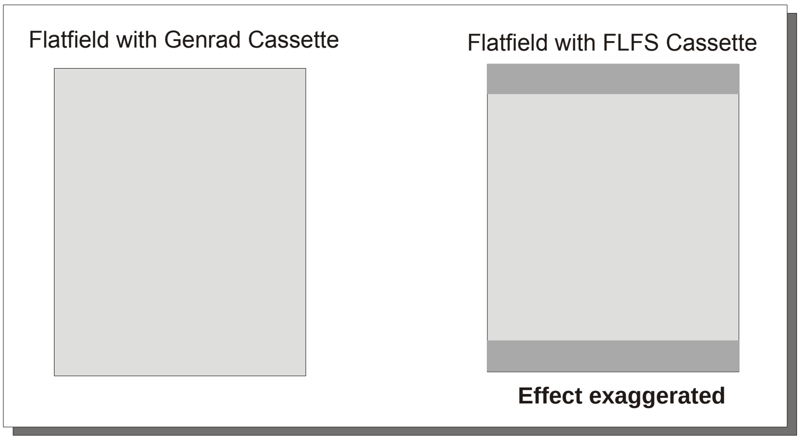
IMPORTANT:

If you use a FLFS cassette for flatfield exposure, the image will be slightly darker in the upper and lower image area where the backscatter protection is removed (approx. 1 cm each). These darker zones also have to be used for image quality evaluation in slow scan and fast scan direction.


Flatfield with Genrad Cassette
Flatfield with FLFS Cassette
Effect exaggerated

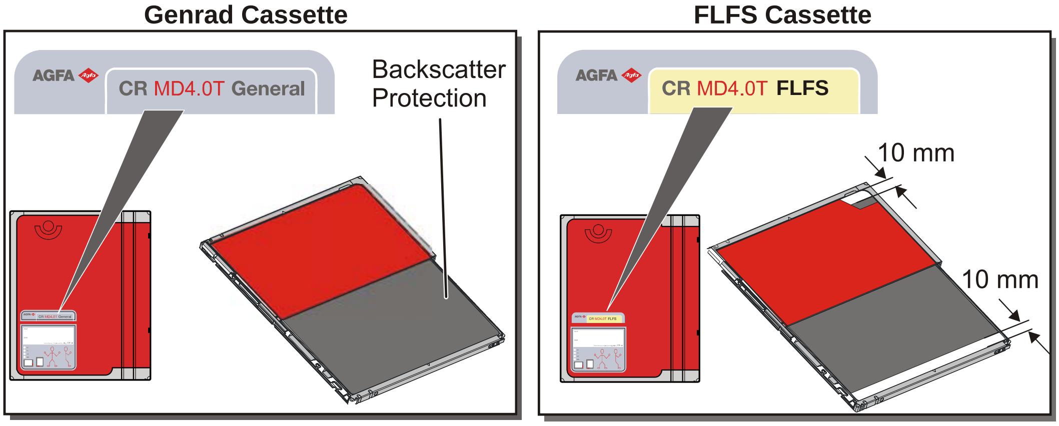

Genrad Cassette
FLFS Cassette
AGFA
CR MD4.0T General
Backscatter Protection
AGFA
CR MD4.0T FLFS
10 mm
10 mm

Figure 28

5 Completion of the Maintenance

5.1 Reset of the Maintenance Indicator

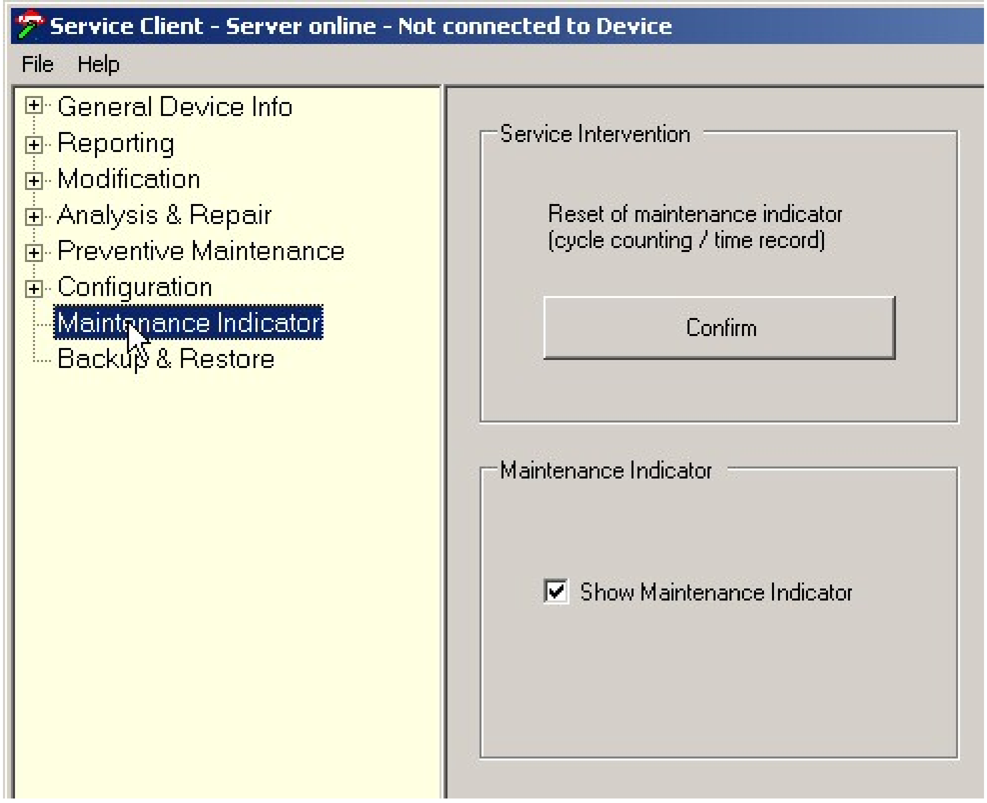
IMPORTANT

This step is only required, if the “maintenance indicator” is activated.

If the maintenance indicator is activated, a user message "Preventive Maintenance required" pops-up at the NX workstation if 12.000 IP cycles or 1 year are over since the last reset of the maintenance indicator.

(1) In the CR30-X service client select “Maintenance Indicator”.

(2) Select “Confirm” at “Reset of Maintenance Indicator”.



Service Client - Server online - Not connected to Device

Service Intervention

Reset of maintenance indicator
(cycle counting / time record)

Maintenance Indicator

☑ Show Maintenance Indicator

File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Confirm

Figure 29

5.2 Creating a Backup of Device specific Data

(1) In the CR30-X service client select "Backup & Restore".

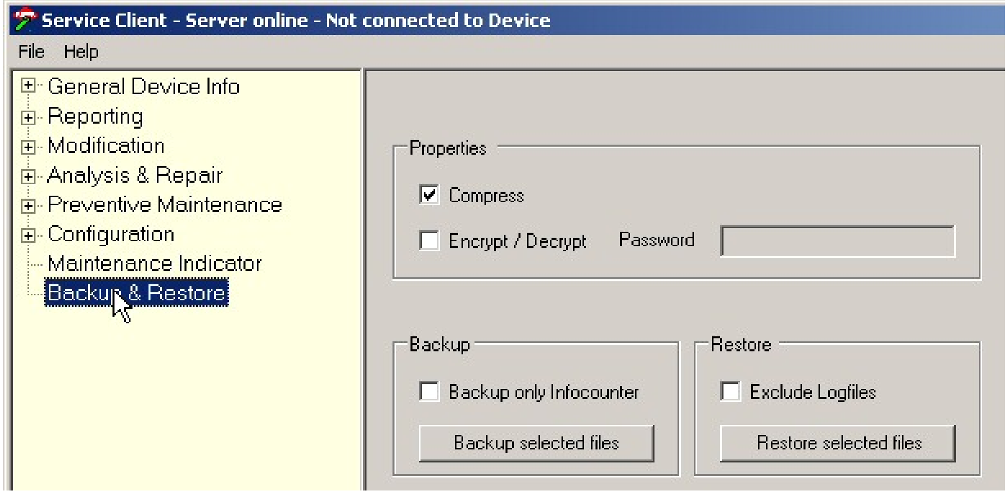
(2) Confirm that property "compress" is activated.

(3) Select "Backup selected files".

(4) In the "save as" dialogue select directory: D:\backup\CR 30-X

(5) Save the file with date and serial number in the file name.

(6) Copy the file additionally to a USB stick and store the file on a save place.


Service Client - Server online - Not connected to Device
File
Help
General Device Info
Reporting
Modification
Analysis & Repair
Preventive Maintenance
Configuration
Maintenance Indicator
Backup & Restore
Properties
Password
Backup
Restore
Backup selected files
Restore selected files

☑ Compress

☐ Encrypt / Decrypt

☐ Backup only Infocounter

☐ Exclude Logfiles

Figure 30: Backup & Restore screen

5.3 Customer Conversation

(1) Fill out the Maintenance checklist and hand it out to the customer.

(2) Explain the results of the maintenance to the customer.

This page is intentionally left blank to enable print out of even and odd pages on duplex printers.

6 Maintenance Checklist

Work Instruction for order no.	SN	Film cycles

The maintenance has to be carried out:

Every 12 months or 12 000 image plate cycles

✓ NOTE:

Maintenance must be carried out according to the maintenance instructions DD+DIS171.06E

Diagnostics		**Done**
Questioning of the customer	• Questioning of the customer about problems with the digitizer	☐
Checking images on the workstation	• Checking the last 20 to 40 images for image quality problems	☐
Error statistics	• Read-out and analyzation of the error statistics	☐
Infocounter analysis	• Read-out and analyzation of the infocounter	☐
Reset of the Relative Counters	• Reset of relative counters of all nodes	☐
Checking current Image Quality	• Exposure and print or archive of a flatfield	☐

Maintenance points - Power off		**Done**
Visual Inspection	• Visual check of o Power and FireWire cable o Covers o Cables inside the digitizer, especially at cassette unit left hand side o 4 belts in the cassette unit	☐
Cleaning; General	• Cleaning the inside with a vacuum cleaner Especially checking for loose dust in transport unit	☐
Cleaning of the Erasure Unit	• Cleaning of the erasure unit with a lint free cloth	☐
Checking the Teflon tape at the cassette unit	• Checking the Teflon tape at the cassette unit and replacement if required	☐
Greasing the spindle nut	• Put some grease at the spindle in the area of the spindle nut.	☐
Cleaning of the Scan Line	• Cleaning of the Scan Line if dust stripes are visible	☐
Cleaning of scan rollers	• Cleaning of the 2 lower scan rollers if spot artifacts are visible on the image.	☐
Checking of Cassette Condition	• Check of all cassettes for damage	☐

Maintenance points - Power on		**Done**
Performing stall calibration for all motors.	• Performing stall calibration for all motors	☐
Check of safety switch	• Opening of cassette unit to check function of safety switch	☐
Performing Test Cycles	• Performing of 5 test cycles per cassette format	☐
Technical Image Quality Check of the System	• Exposure and check of flatfield. Comparison with flatfield made before maintenance • Comparison with test pattern "lowest acceptable quality" (slow scan / fast scan direction) if image quality is not OK.	☐

Completion		**Done**
Reset of Maintenance Indicator	- Reset of Maintenance Indicator	☐
Creating a Backup of Device specific Data	- Creating a Backup - Storage on hard disk and on service PC	☐
Customer conversation	- Explanation of results of preventive maintenance	☐

Remarks:

....

....

....

....

....

....

....

....

....	....
Date / Signature Service Technician	Date / Signature Customer

Chapter 10

Service Bulletins

Document No: DD+DIS150.06E

CR 30-X

Type 5175 /100/110

► Please note

Service Bulletins are not part of the Service Manual for Download.

Please download the Service Bulletins from the GSO Library:

MEDNET GSO Library → Computed Radiography > CR Digitizers > CR30-X
→ Service Bulletin

Edition 1, Revision 0
04-2008 printed in Germany

Document Node ID 24620726
service_bulletin_cover_e_template_v01

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HEALTHCARE
Imaging Services

Chapter 11

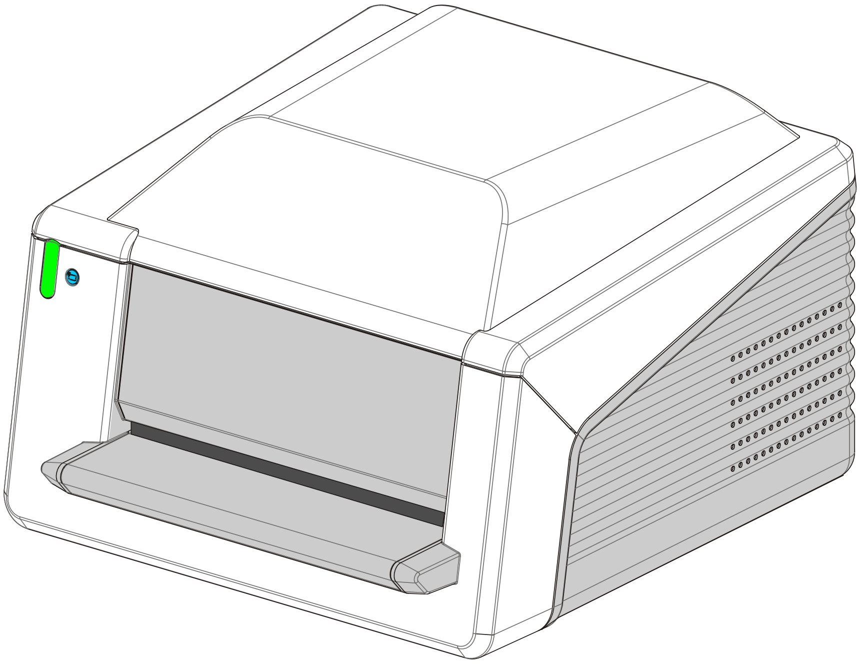
Installation Planning

Document No: DD+DIS172.06E

CR 30-X

Type 5175/100/105/110/120/125

Edition 1, Revision 5



✓ This documentation is separately available. Order No: DD+DIS172.06E

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Edition 1, Revision 5
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► Manufacturer

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WARNING:

Improper operation or service activities may cause damage or injuries.

INSTRUCTION:

(1) Read the "Generic Safety Directions" document (see MEDNET GSO => General Info => Agfa HealthCare => Publications => Service Manual) prior to attempting any operation, repair or maintenance task on the equipment.

(2) Strictly observe all safety directions within the "Generic Safety Directions" and on the product.

NOTE:

To verify the latest version of single documents and of Service Manuals refer to the Document Type ‘Order List’ in the GSO library.

► Purpose of this Document

This document contains all planning data including the required measures to be carried out on site prior to the machine delivery.

► Document History

Edition. Revision	**Release Date**	**Changes compared to previous Version 1.3:**
1.5	11-2010	• Added digitizer subtypes 105, 120 and 125 in tables in sections 9.1 and 9.2. • Updated definition about patient vicinity. See section 10.

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1 Installation Planning-Checklist

#	Step	Goal	See section	Done
1.	Ask the Agfa sales representative for a contact person in the hospital.	To schedule an installation date with the customer.	-	☐
2.	Make yourself familiar with the System Overview.	To see in which environment the digitizer will be installed.	2	☐
3.	Make yourself familiar with the scope of delivery.	Basic information, to see whether additional, site specific material for installation might be required.	3	☐
4.	Make yourself familiar with the available accessories.	To be able to order required accessories before the installation.	3.1	☐
5.	Have a look at the machine dimensions.	To be able to check, whether the digitizer fits in the desired installation place.	4	☐
6.	Check the required free space around the digitizer.	To see whether enough free space for repair and maintenance is available.	5	☐
7.	Make yourself familiar with the warnings and notes concerning system integration.	To be aware of the peculiarities when integrating the digitizer into the CR 30-X system.	6	☐
8.	Compare the required ambient and climatic conditions with the condition at the installation place.	To prevent installation of the digitizer in an inappropriate environment, leading to functional faults.	7	☐
9.	Make an appointment with the house electrician or the authorized electrician and check the required electrical connection.	To be able to initiate all required prerequisites in advance to allow proper electrical connections.	8	☐
10.	Make yourself familiar with the digitizer specifications.	To acquire all relevant data which might be required for installation and operation of the digitizer.	9	☐
11.	Have a look at the digitizer safety standards and regulations.	To inform the operator of the device about the safety guidelines, regulations and proper handling of the digitizer.	10	☐
12.	Confirm the installation readiness.	To be sure that all required pre-installation conditions are fulfilled.	Last Page	☐

2 Product Description

This is the Installation Planning Document for the CR 30-X digitizers type 5175, subtypes 100, 105, 110, 120 and 125.

Name of the digitizers:

- Subtypes 100, 105: CR 30-X
- Subtypes 110, 120, 125: Digitizer (ex factory no name on the covers)

All of the above mentioned subtypes are called "digitizer" in this document.

The differences between the different subtypes are described in section 9.

2.1 System Overview

The digitizer is part of the digitizer system, consisting of:

- Digitizer
- NX Workstation (Tower or laptop version)
- Cassette with Image Plate (IP)

Optional Components (not displayed)

- Printer (e.g. Drystar 5302)
- Additional Cassettes
- Uninterruptible Power Supply (UPS)

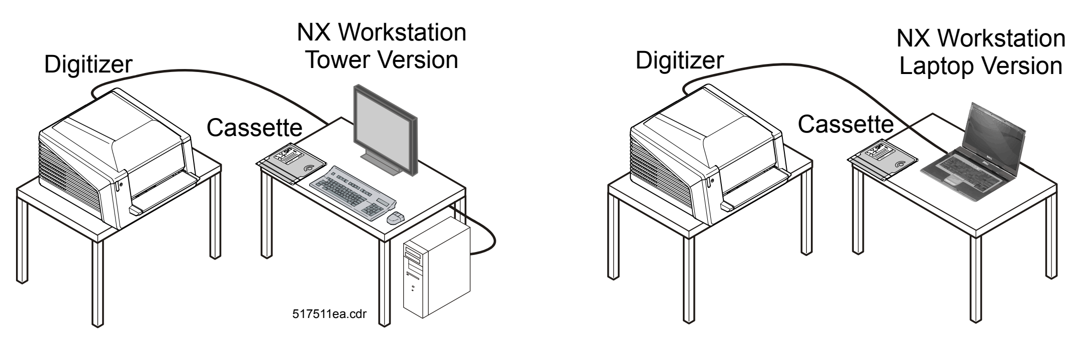

Digitizer
NX Workstation
Tower Version
Cassette
517511ea.cdr
Digitizer
NX Workstation
Laptop Version
Cassette

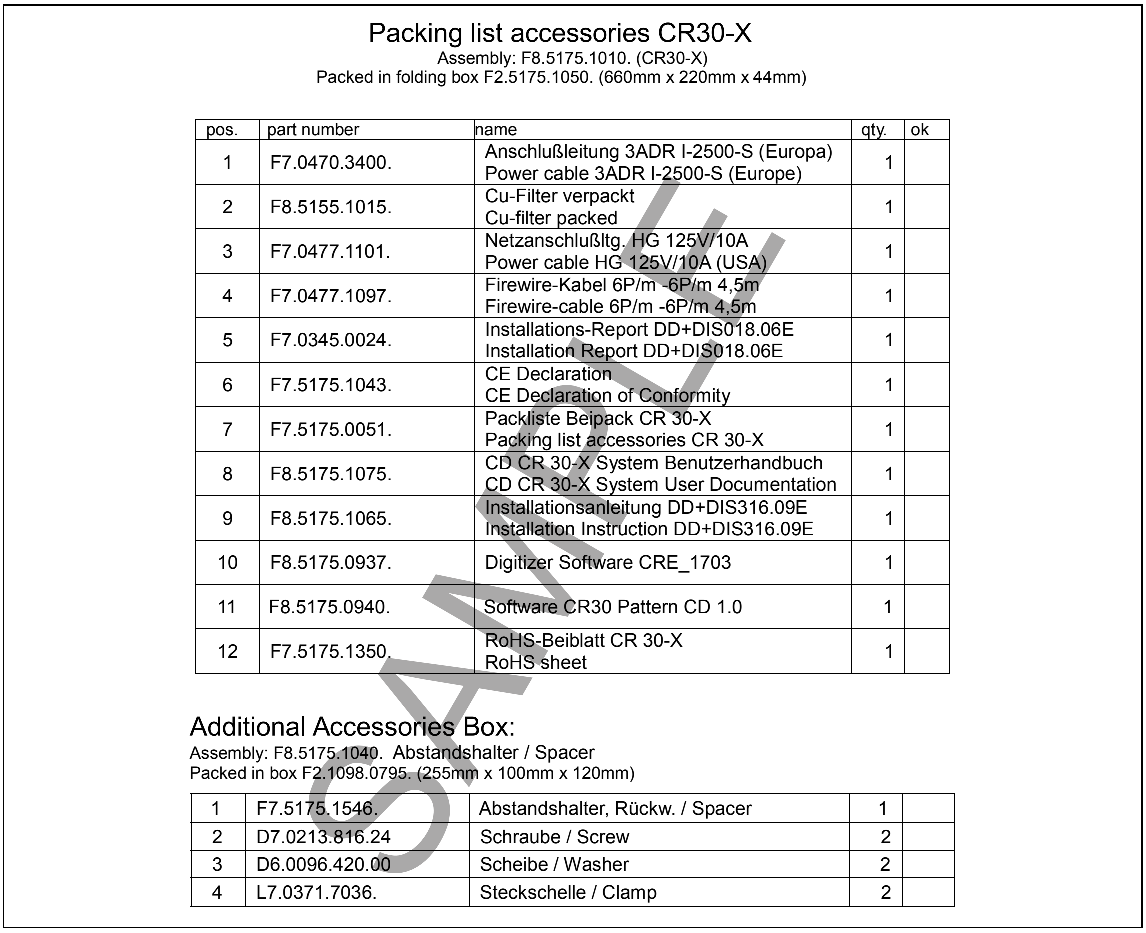
Figure 1

NOTE:

This document describes the installation planning of the digitizer.
For more information to the NX Workstation and optional printer refer to the corresponding documents on MedNet, GSO Library.

3 Scope of Delivery and Accessories

Enclosed an example for the packing list. This list is part of delivery.



Packing list accessories CR30-X
Assembly: F8.5175.1010. (CR30-X)
Packed in folding box F2.5175.1050. (660mm x 220mm x 44mm)

pos.	part number	name	qty.	ok
1	F7.0470.3400.	Anschlußleitung 3ADR I-2500-S (Europa) Power cable 3ADR I-2500-S (Europe)	1	
2	F8.5155.1015.	Cu-Filter verpackt Cu-filter packed	1	
3	F7.0477.1101.	Netzanschlußltg. HG 125V/10A Power cable HG 125V/10A (USA)	1	
4	F7.0477.1097.	Firewire-Kabel 6P/m -6P/m 4,5m Firewire-cable 6P/m -6P/m 4,5m	1	
5	F7.0345.0024.	Installations-Report DD+DIS018.06E Installation Report DD+DIS018.06E	1	
6	F7.5175.1043.	CE Declaration CE Declaration of Conformity	1	
7	F7.5175.0051.	Packliste Beipack CR 30-X Packing list accessories CR 30-X	1	
8	F8.5175.1075.	CD CR 30-X System Benutzerhandbuch CD CR 30-X System User Documentation	1	
9	F8.5175.1065.	Installationsanleitung DD+DIS316.09E Installation Instruction DD+DIS316.09E	1	
10	F8.5175.0937.	Digitizer Software CRE_1703	1	
11	F8.5175.0940.	Software CR30 Pattern CD 1.0	1	
12	F7.5175.1350.	RoHS-Beiblatt CR 30-X RoHS sheet	1	

Additional Accessories Box:
Assembly: F8.5175.1040. Abstandshalter / Spacer
Packed in box F2.1098.0795. (255mm x 100mm x 120mm)

1	F7.5175.1546.	Abstandshalter, Rückw. / Spacer	1	
2	D7.0213.816.24	Schraube / Screw	2	
3	D6.0096.420.00	Scheibe / Washer	2	
4	L7.0371.7036.	Steckschelle / Clamp	2	

SAMPLE

Figure 2: Example for the packing list

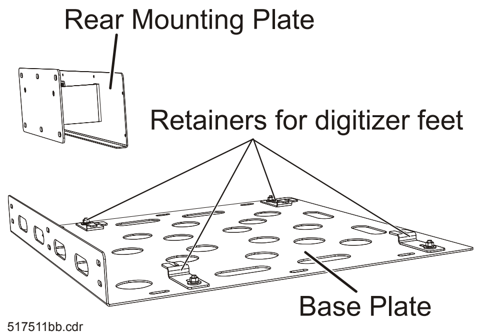
IMPORTANT:

- The digitizer is delivered with two power cables for US/Europe. If the digitizer is installed outside the US or Europe, organize a power cable for your country locally. For detailed specifications refer to section 8, Electrical Connections.
- The digitizer is ordered and delivered with a dedicated NX workstation.
- It is **not** possible to connect the digitizer to another type of Agfa CR workstation (e.g. QS 3.5).

NOTE:

- The digitizer is delivered with all parts, which are required to connect it to a NX workstation.
- Number and format of cassettes / image plates is depending on the individual order.
- The CD with User Manuals contains a reference manual in English language and user manuals in following 28 languages:
  Chinese-simplified, Chinese-traditional, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Vietnamese, Estonian, Hungarian, Latvian, Lithuanian, Slovak, Slovenian, Turkish.

3.1 Accessories

Item	Order Number	Comment
Table with wheels	EWRP3	For dimensions refer to section 4.1.
All-in-one cart	E2M3H	
UPS Powerware 5115, 120 V Version	EGPSE	Can be used for digitizer and NX workstation. For technical specifications see sections 8, 8.2 and 0. See safety note below.
UPS Powerware 5115, 220 V Version	EGPTG	
Wall fixation Kit	EWRQ5	To be used in earthquake areas and in mobile usage. May not be used in military vessels.  Rear Mounting Plate Retainers for digitizer feet Base Plate 517511bb.cdr
Remote Service	Not applicable	See NOTE next page.

Warning:

Images can be lost due to power failure.

Connect the equipment to an un-interruptible power supply (UPS) or an institutional standby generator.

NOTE:

Previously a „CR Inroom X-Ray Shielding“ was available as accessory.

This is not available anymore. Initiate appropriate measures to protect the digitizer and cassettes with image plates from scattered radiation. See also section 7.1.

NOTE to Accessory "Remote Service":

In general it is possible to diagnose and repair the digitizer to a certain extent remotely.

To enable remote service of the digitizer remote access has first to be organized.

Remote Access is established via the Agfa own Secure Remote Service System (SRSS).

For more information to the SRSS see MedNet GSO Library path:
Technical Services > Service Delivery > SRSS

4 Digitizer Dimensions

Dimensions in cm [inch].

Digitizer closed:

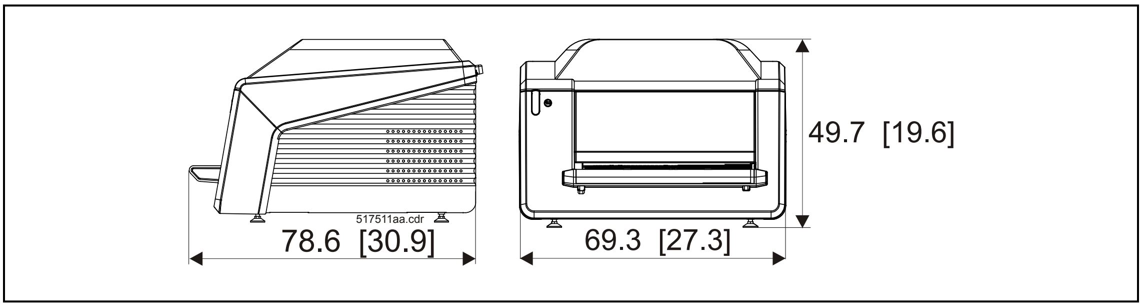

517511aa.cdr
78.6 [30.9]
69.3 [27.3]
49.7 [19.6]

Figure 3

Digitizer opened:

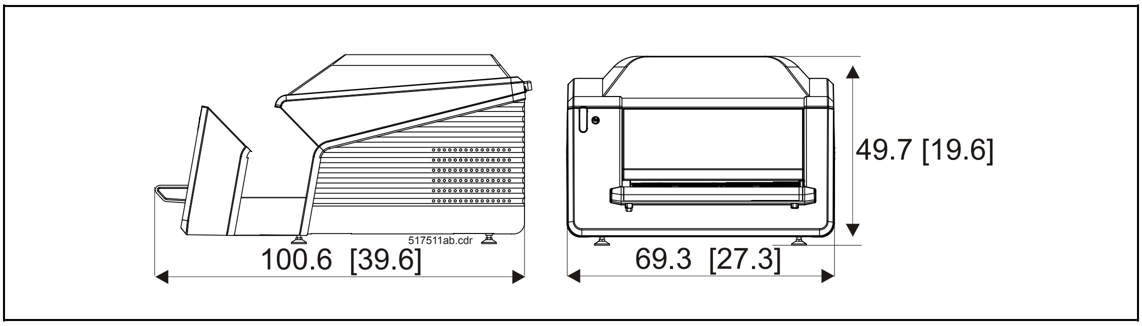

517511ab.cdr
100.6 [39.6]
69.3 [27.3]
49.7 [19.6]

Figure 4

4.1 Dimensions of optional Tables

Two optional tables are available.

Recommendation:
Use one of these table for the digitizer, as they perfectly fit to the size and weight of the digitizer.

For order number of the optional tables refer to section 3.1.

Table with wheels	All-in-one cart
 • Table for digitizer • Storage for cassettes	 • Table for digitizer • Storage for cassettes • Storage of processing station, incl. monitor, keyboard and mouse • Storage of optional UPS

IMPORTANT:

If the customer uses a different table, observe the stability of the table: It must be able to carry the weight of 80 kg (176,4 pounds) and may not be subject to excessive shock and vibrations from other sources. See also corresponding safety note in section 6.

Dimensions see next page.

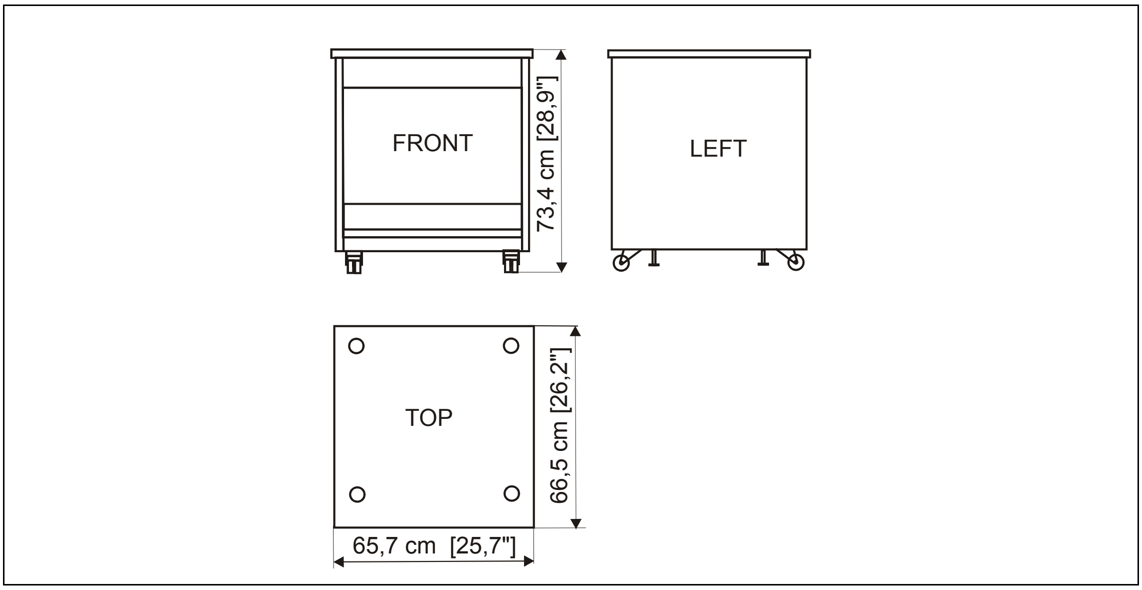

FRONT
73,4 cm [28,9"]
LEFT
TOP
66,5 cm [26,2"]
65,7 cm [25,7"]

Figure 5: Dimensions of table with wheels in cm [inch]

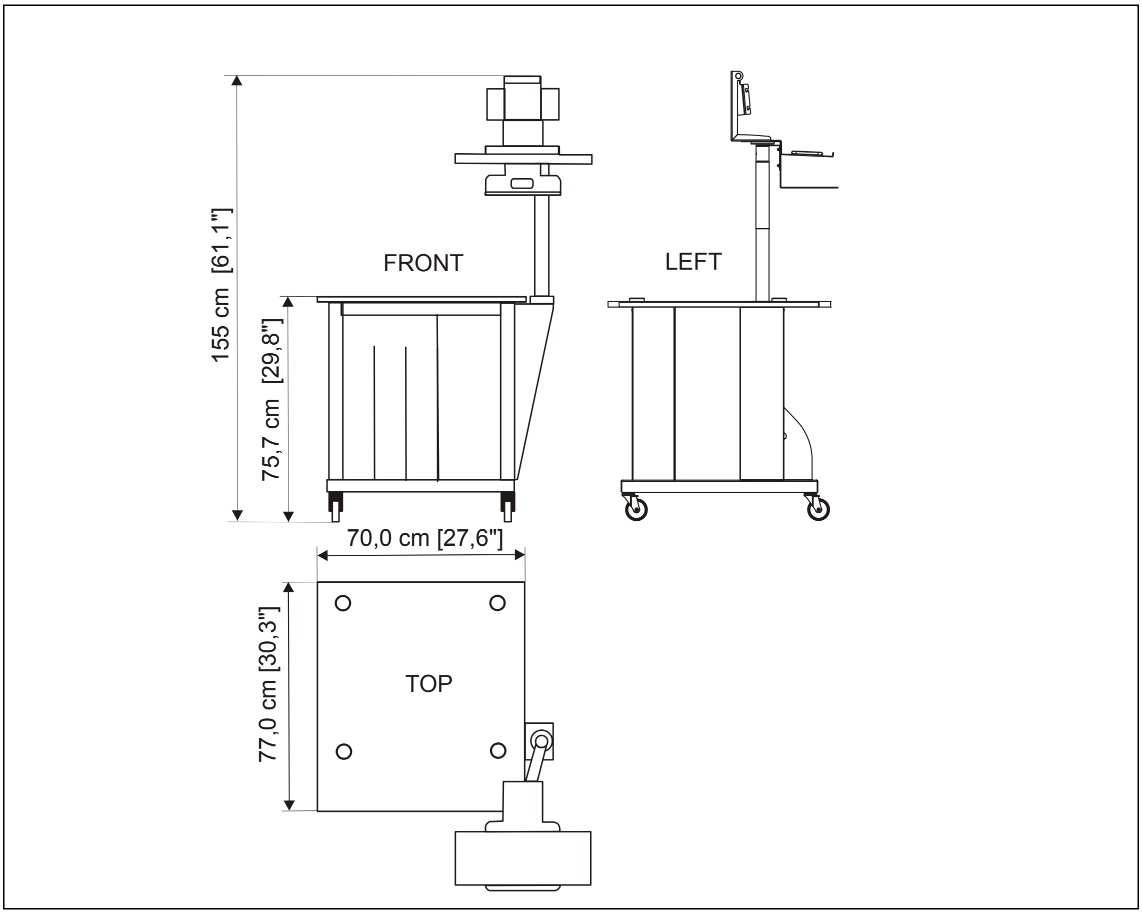

155 cm [61,1"]
75,7 cm [29,8"]
FRONT
LEFT
70,0 cm [27,6"]
77,0 cm [30,3"]
TOP

Figure 6: Dimensions of all-in-one cart in cm [inch]

5 Minimum free Space for Operation and Maintenance

Scale 1:20. Dimensions are in cm [inch].

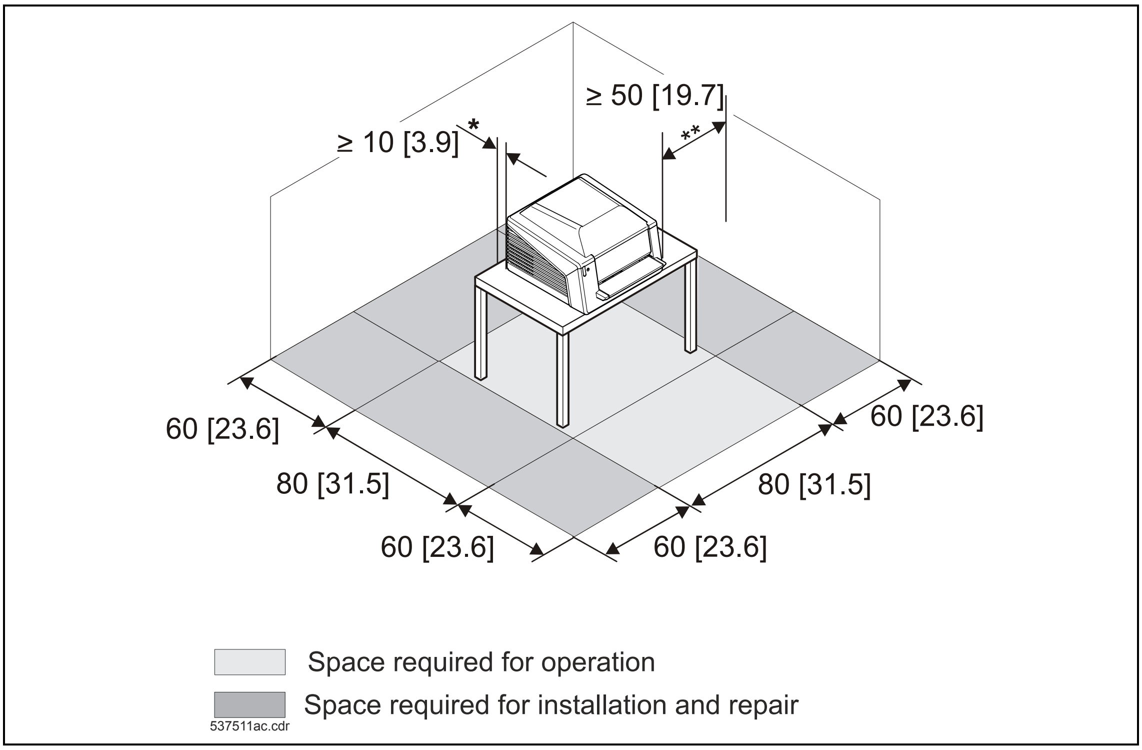

≥ 10 [3.9] *
≥ 50 [19.7] **
60 [23.6]
80 [31.5]
60 [23.6]
60 [23.6]
80 [31.5]
60 [23.6]
Space required for operation
Space required for installation and repair
537511ac.cdr

Figure 7

NOTE:
If installed on the optional wheel table (see section 4.1) the digitizer can also be installed in a corner.

Be aware, that the mains switch is in the rear. See section 8.1. At a corner installation the mains switch may not be accessible.

IMPORTANT:
*****The clearance in the rear for electrical connectors and to provide sufficient air flow has to be at least 10 cm [3.9 in] in any case.

******At least 50 cm [19.7 in] space has to be provided on the right hand side to allow cleaning of the scan line with the cleaning brush. This can be performed by the customer.

6 System Integration

- The digitizer has to be connected to a dedicated NX workstation via Fire Wire cable.
- One NX workstation can acquire images from one digitizer.

IMPORTANT:

- Unpacking and putting on table should be done by the forwarder. Refer to the unpacking instruction.
- Three people are required to lift the digitizer on a table.
- Recommended table height: 75 cm
- The Fire Wire cable length is 4.5 m for the NX workstation tower version, and 3 m for the NX workstation laptop version. This cable length is sufficient for the "Fast ID workflow"*****. Using longer cables is not supported.
- If the laptop version of the NX workstation is used: Do **not** place the laptop on top of the CR 30-X, because the accumulated heat developed by the digitizer and the laptop may affect the operation of the system.

NOTE:
***Fast ID Workflow** means: The cassette is not identified before exposure, but waits for patient data entry at the NX Workstation after the cassette is entered into the digitizer. Only when the patient data are entered at the NX Workstation and sent to the digitizer the scan cycle begins.

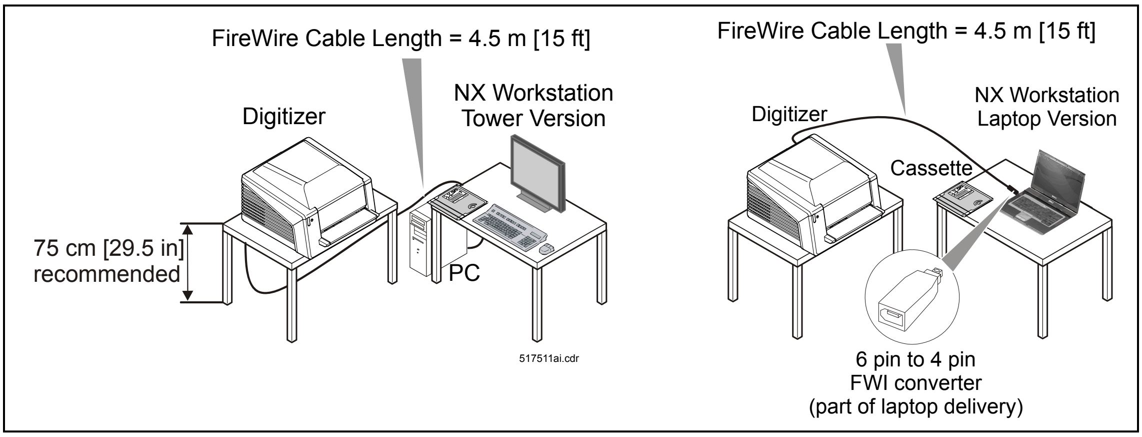

FireWire Cable Length = 4.5 m [15 ft]
Digitizer
NX Workstation
Tower Version
75 cm [29.5 in]
recommended
PC
517511ai.cdr
FireWire Cable Length = 4.5 m [15 ft]
Digitizer
NX Workstation
Laptop Version
Cassette
6 pin to 4 pin
FWI converter
(part of laptop delivery)

Figure 8

WARNING:

Using a FWI cable > 4.5 m may lead to unstable or no communication between digitizer and NX workstation.

Only use the FireWire cable which is part of delivery. Longer cables are not supported.

WARNING:

When different combinations of equipment are used in various medical environments a potential difference (V) can exist between the protective earths in different localities. If the protective earthing fails this potential difference can cause a HAZARD for the OPERATOR or for the PATIENT.

- To comply with ISO 60601-1 (annex I) all computers and peripherals must be connected to the same power source.
- Always connect the associated monitor to the same Uninterruptible Power Source as the PC.
- When connecting digitizer and control PC at two different sockets, installed in the wall: Inform the hospital technician that digitizer and control PC have to be connected to the same ground and the same phase.

WARNING:
Excessive vibrations during scanning may decrease image quality.

The structure and stability of the used table need to be suitable in relation with the size and weight of the system. The table may not be subject to excessive shock and vibrations from other sources.

7 Climatic and ambient Conditions

7.1 Operating Conditions

Ambient temperature:	Min.:	+15 °C (59 °F)
	Max.:	+30 °C (86 °F)
	Best:	+20 °C (68 °F) to 25° C (77°F)
Relative humidity: At 25°C (77°F) ambient temperature	Min.:	15 %
	Max.:	75 %
	Best:	30 % to 60 %
Magnetic fields:	Max. 3.8 µT in conformance with EN6100-4-8: level 2	
Radiation influences:	If the digitizer is installed in the X-Ray room, it has to be protected against scatter radiation.	

Warning:

Image plate is sensitive for X-rays. Poor image quality possible.

The digitizer and the cassette storage shall be protected against X-ray radiation this way, that the annual dose equivalent at the installation place will not exceed 1 mSv.

Ambient Light:	The digitizer may not be operated in direct sun light. The image quality will not be affected, if operated in ambient light of max. 2500 Lux.
High Frequency Emission and Immunity:	For detailed information refer to the digitizer user manual , Appendix B.

7.2 Transport and Storage Conditions

Transport of packed device:	According IEC 721-3-1 Transport: 2K2, 2M2	
Ambient temperature during transport:	Minimum:	-25 °C (-13 °F) for maximal 72 h
	Maximum:	+55 °C (131 °F) for maximal 96 h
Storage of packed device:	According IEC 721-3-1 Storage: 1K2, 1M2	
Ambient temperature during storage	Minimum:	+5 °C (41 °F)
	Maximum:	+40 °C (104 °F)
Relative humidity during storage:	Minimum:	5 %
	Maximum:	85 %
Rate of temperature change during storage:	Maximum:	0,5 °C/min

8 Electrical Connections

Warning:

Electrical device. Shock possible.

INSTRUCTION:

- Do not position Agfa EQUIPMENT so it is difficult to operate the disconnection device when an APPLIANCE COUPLER or separable plug is used as isolation.
- Local and International wiring regulations must be observed. Check all supplies and voltages, currents, trips and fuses with the Hospital facilities department or their engineers.

Installation guidelines

Electrical installations have to be done in accordance with national regulations or statutory requirements, e.g.:

VDE: (Germany) Electrical installations in the installation room must be in compliance with the regulations IEC 364, VDE 0100, and VDE 0107.

UL: (US) Electrical installations in the installation room must be in compliance with the regulations: “National Electrical Code" (NEC) (NFPA70).

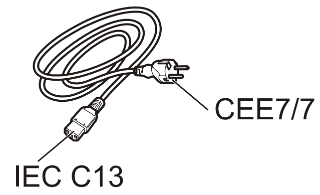
Mains connection in the installation room

VDE: Double earthed pin outlet in compliance with DIN 49441 and with CEE 7 standard cover V II.

UL: Earthed contact outlet for the NEMA 5-15 P plug

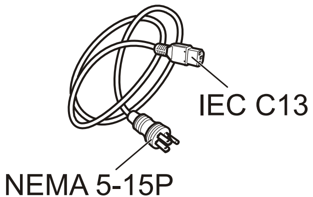
Mains cable
(part of delivery)

Euro-Version: CEE7/7 - H05VV - F3G1 - 3 x 1 mm² with IEC C13 plug (female); cable length 3 m



5175_C11_001.cdr

US/CAN-Version: NEMA 5-15P - SJT, 3 x AWG 18 with IEC C13 plug (female); Cable length 3 m, Hospital grade (HG)



5175_C11_002.cdr

IMPORTANT:

The digitizer is delivered with two power cables for US/Europe. If you need a different cable, organize it locally.

Fire Wire cable

IEEE 1394, - 4,5 m with ferrite core (part of digitizer delivery)

Mains switch

Upon digitizer installation, it must be ensured that either the mains connector or an all-pole circuit breaker for the installation on site is located close to the machine and easily accessible.

Cables for the optional UPS

UPS 230 V Version	
1	USB cable; part of UPS delivery
2	Extension cable (1.8 m); part of UPS delivery
3	Extension cable (1.8 m); part of UPS delivery
4	Mains cable*; part of digitizer delivery
UPS 120 V Version	
5	Mains cable*; part of digitizer delivery
6	Mains cable; part of NX delivery
7	USB cable; part of UPS delivery
8	Fixed SJT, 3 x AGW 18 with NEMA 5-15 P plug; 1,8 m

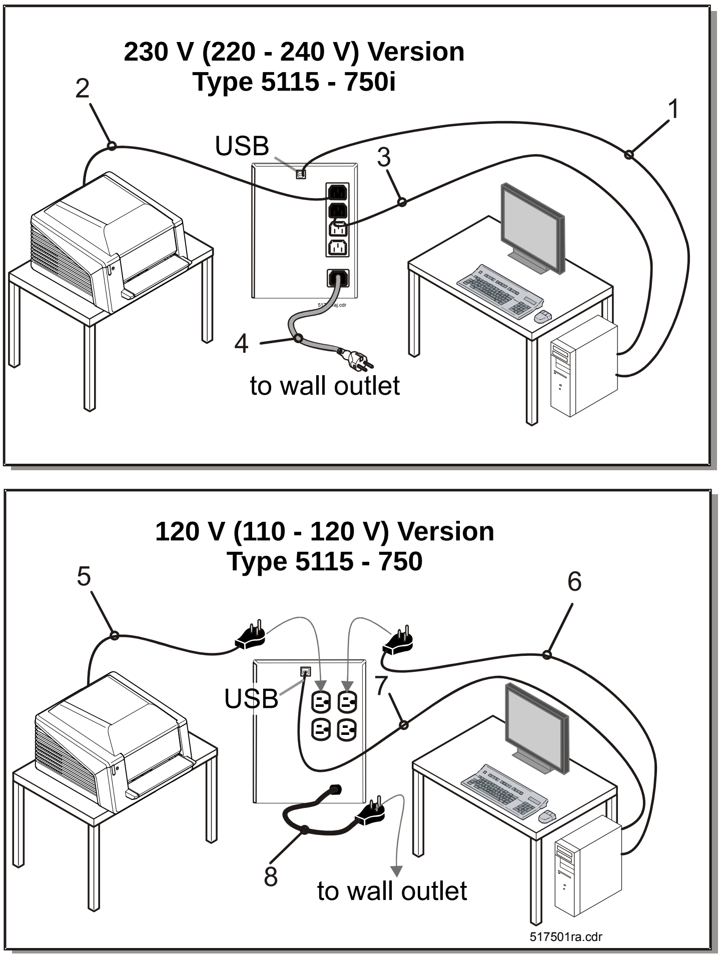

230 V (220 - 240 V) Version
Type 5115 - 750i
2
1
USB
3
4
to wall outlet
120 V (110 - 120 V) Version
Type 5115 - 750
5
6
USB
7
8
to wall outlet
517501ra.cdr

Figure 9

* concerning digitizer mains cable delivery see IMPORTANT note previous page.

8.1 Electrical Connections at the Digitizer

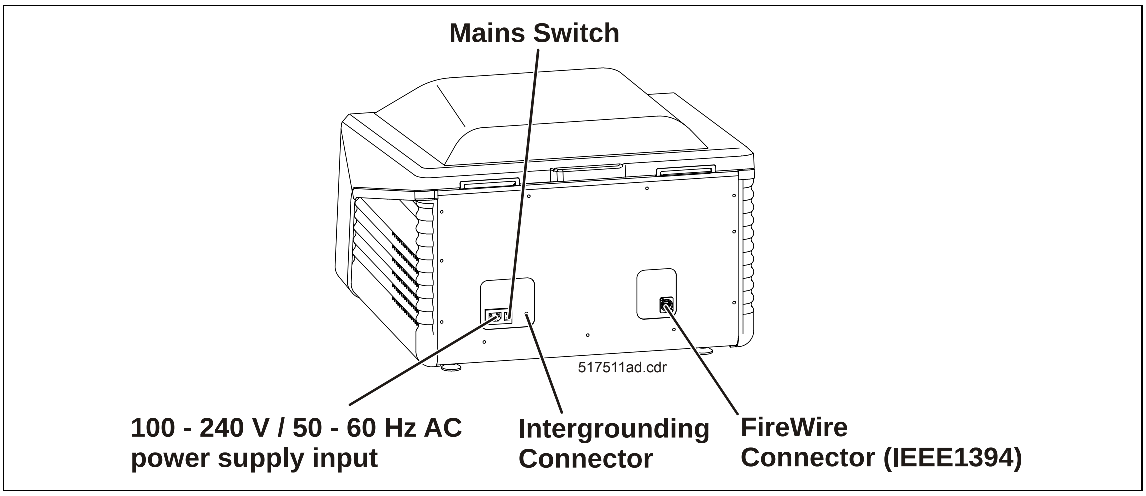

Mains Switch
517511ad.cdr
100 - 240 V / 50 - 60 Hz AC power supply input
Intergrounding Connector
FireWire Connector (IEEE1394)

Figure 10

8.2 Electrical Connections at the optional UPS

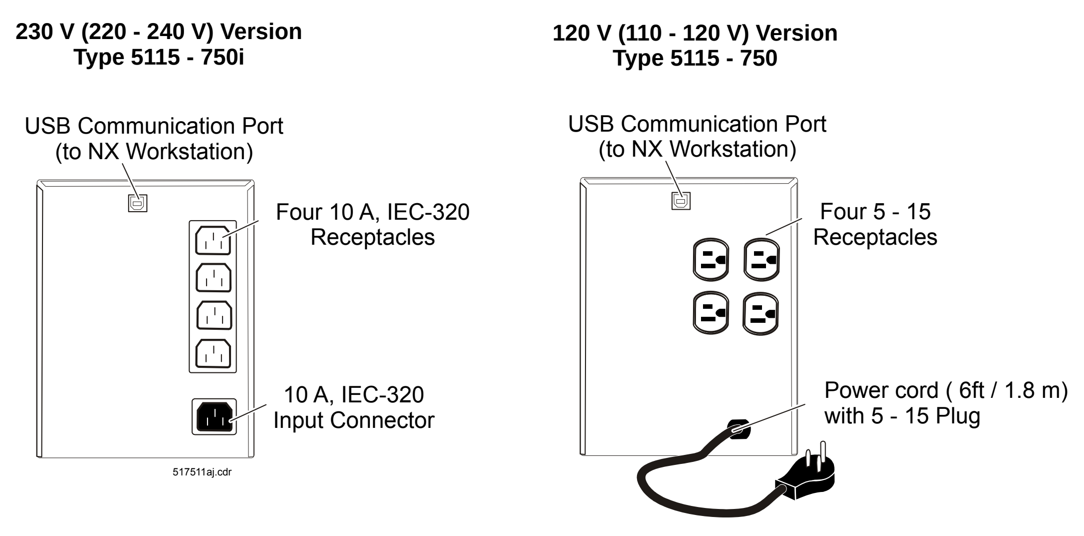

230 V (220 - 240 V) Version
Type 5115 - 750i
USB Communication Port (to NX Workstation)
Four 10 A, IEC-320 Receptacles
10 A, IEC-320 Input Connector
517511aj.cdr
120 V (110 - 120 V) Version
Type 5115 - 750
USB Communication Port (to NX Workstation)
Four 5 - 15 Receptacles
Power cord (6ft / 1.8 m) with 5 - 15 Plug

Figure 11

9 Specifications

9.1 Type Overview

Type	ABC Code	Serial Numbers
5175/100	ETDPS	≥ 1001 ≥ 10.000 Speed Class Free ≥ 30.000 Support of 35 x 35 cm cassettes
5175/105	5QVN4	≥ 39.000
5175/110	EXF1O	≥ 6001 ≥ 20.000 Speed Class Free ≥ 40.000 Support of 35 x 35 cm cassettes
5175/120	5QVO6	≥ 41.000
5175/125	5QVP8	≥ 43.000

9.2 Functional Data

Parameter		Value
Throughput 35x43 cm cassettes		Type 5175/100: approximately 60 / hour
		Type 5175/105: approximately 35 / hour
		Type 5175/110: approximately 50 / hour
		Type 5175/120: approximately 60 / hour
		Type 5175/125: approximately 35 / hour
Pixels per line x scan lines	15 x 30 cm	1440 x 2928
	18 x 24 cm	1728 x 2328
	24 x 30 cm	2328 x 2928
	35 x 35 cm	3480 x 3480
	35 x 43 cm	3480 x 4248
Bits per pixel / number of grey steps		16 / 65535
Scan Resolution [µm]		100
Image Buffer		256 MB (one complete image)

9.3 Electrical Data Digitizer

Parameter	Value
Rated voltage [~V]	100-240 AC (autosensing)
Frequency [Hz]	50/60
Power consumption [W]	120 standby 320 peak

9.4 Functional Data of the optional UPS

Parameter	Value
Rated voltage [~V] UPS Powerware 5115 - 750 (ABC Code: EGPSE)	• 120 = Default • 110 = user adjustable via rear panel DIP switches
Rated voltage [~V] UPS Powerware 5115 - 750i (ABC Code: EGPTG):	• 230 = Default • 220 or 240 = user adjustable via rear panel DIP switches
Frequency [Hz]	50/60 (autosensing)
Battery runtime [min.]	> 5
Output Power [W]	750
Dimensions (HxWxD) [mm/in]	192 x 150 x 270 / 7.6 x 5.9 x 10.6
Weight [kg/lb]	7.8 / 17.2
More info	refer to www.powerware.com

9.5 Climatic Data

Parameter	Value
Heat emission [kJ/h]	432 standby 1152 maximum

9.6 Sound Emission Data

Parameter		Value
Noise level acc. ISO 7779	in standby:	5 dB(A) maximum
	in operation:	65 dB(A) maximum

9.7 Boot-up Time and Warm-up Time

Parameter	**Value**
Boot-up time after switch on or reset [sec.]	60
Warm Up Time "Cold Start"	• Image quality within specification after boot-up time. • Optimum image quality after 30 min.
Warm Up Time "Warm Start" (Digitizer was > 30 min. in operation and not switched off for > 3 min.)	Warm-up time = boot-up time

9.8 Interface Data

Parameter	**Value**
Interface to NX workstation	IEEE 1394 (FireWire)

9.9 Service Data

Parameter	**Value**
Infocounter	yes
Error diagnostics built in	yes
Remote / preventive service capable	yes

9.10 Functional Data Image Plates

Parameter		Value
Image plate type		MD40
Image retention	Within 1 hour:	Recommended readout time
	After 2 hours:	70% of the stored energy is still present with no visible loss of information upon readout
	After 24 hours:	Image retention still exceeds 45%. Slightly reduced image quality

9.11 Dimensions and Weight

9.11.1 Dimensions, packed Machine

Parameter	Value
Length / depth (cm / inch)	90 / 35.4
Width (cm / inch)	80 / 31.5
Height (cm / inch)	69 / 27.2

9.11.2 Dimensions, closed Machine

Parameter	Value
Length / depth (cm / inch)	78.6 / 30.9
Width (cm / inch)	69.3 / 27.3
Height (cm / inch)	49.7 / 19.6

9.11.3 Dimensions, opened Machine

Parameter	Value
Length / depth (cm / inch)	100.6 / 39.6
Width (cm / inch)	72 / 28
Height (cm / inch)	45 / 18

9.11.4 Weight

For Serial Number < 30.138 Type (5175/100) and Serial Number < 40.001 (Type 5175/110):

Parameter	Value
Digitizer alone (kg / pounds)	98 / 216.1
Digitizer with packing incl. palette (kg / pounds)	124 / 273.4

For Serial Number ≥ 30.138 Type (5175/100) and Serial Number ≥ 40.001 (Type 5175/110):

Parameter	Value
Digitizer alone (kg / pounds)	80 / 176,4
Digitizer with packing incl. palette (kg / pounds)	106 / 233.7

9.11.5 Dimensions Pallet

Parameter	Value
Length / depth (cm / inch)	90 / 35.4
Width (cm / inch)	80 / 31.5
Height (cm / inch)	15 / 6

10 Safety Standards

The digitizer complies with:

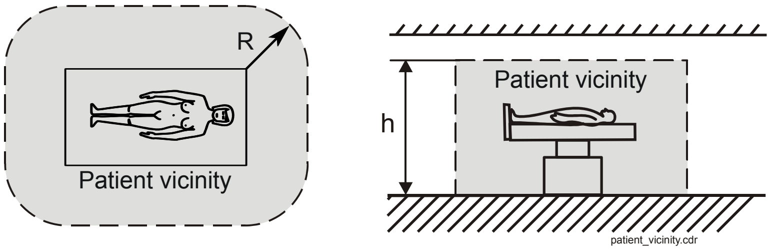
- The general safety regulations:
    - IEC 60601-1:1988 + A1:1991 + A2:1995,
    - IEC 60601-1-1:2000 / EN 60601-1-1:2001,
    - IEC 60601-1-4:1999 / EN 60601-1-4:1996 + A1:1999,
    - IEC 60601-1-2: 2001 / EN 60601-1-2:2001,
    - UL 60601-1:2003,
    - CAN/CSA C22.2 No. 601.1

- The laser safety regulations:
    - IEC 60825-1:2001 / EN 60825-1:1994 + A1:2002 + A2:2001,
    - DHHS/FDA 21 CFR, Parts 1040.10 and 1040.11;
    - EN 540: 1993,
    - EN 980: 2003,
    - EN 1041: 1998,
    - ISO 18906: 2000,
    - EN ISO 13485: 2003;

The leakage current limits for which this device is tested, excludes installation in the patient vicinity. Therefore the equipment must be placed outside the patient vicinity according to the local valid regulation (UL 60601-1 or EN 60601-1).

The patient vicnity is defined as follows:

- UL 60601-1:
  - 1,83 m (6 feet) beyond the perimeter of the bed (examination table, dental chair, treatment booth, and the like)
  - vertical 2,29 m (7.5 feet) above the floor
- EN 60601-1:
  - 1,5 m (4.9 feet) beyond the perimeter of the bed (examination table, dental chair, treatment booth, and the like)
  - vertical 2,5 m (8.2 feet) above the floor



R = 1.5 m / 4.9 feet (EN 60601-1) or 1.83 m / 6 feet (UL 60601-1)
h = 2.5 m / 8.2 feet (EN 60601-1) or 2.29 m / 7.5 feet (UL 60601-1)

Figure 1: Patient vicinity according to IEC 60601-1 / UL 60601-1

- Other equipment that is in contact with the patient is not connected directly to the Agfa system without additional protective measures.

In order to guarantee an effective and smooth installation process within the targeted time frame, the following tasks of the checklist below must be carried out prior to the installation of the device.

Check and discuss all the required measures for the installation by means of this checklist. Remarks on the individual items can be noted on the back of the list.

After completion please hand out this checklist to your local Agfa representative

Name of Agfa FSE: ____________________________ Checking date:_____________

Client name: ____

Client address: ____

____

Contact person,
name and title: ____

Client phone number: ______________________ Extension ____________________

Type of systems: _______________ Order /OGT number:____________________

#	**Task**	**OK**
1	Installation site corresponds to the requirements, with sufficient room for operation and maintenance. Details see section 5.	☐
2	Digitizer System Integration prepared as recommended. Details see section 6.	☐
3	Ambient conditions are within the given limits. Details see section 7.	☐
4	Required electrical supply for the system is available. Details see section 8.	☐
	INSTALLATION SITE READY FOR INSTALLATION	☐

Remarks:____

____

____

Signature of FSE : ___________________

This page is intentionally left blank to enable print out of even and odd pages on duplex printers.

Chapter 12

List of Contents

1 Glossary 1

1 Glossary

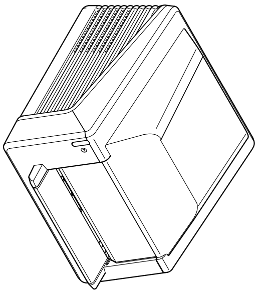
Term	Short description
µGy	Micro Gray – x-ray dose 1Gy= 0.87 x 10 –2 J/kg
ADC	**A**gfa **D**iagnostic **C**enter
AE – title	**A**pplication **E**ntity
ASAP - Package	**A**GFA **S**canner **A**ccess **P**ackage Software that runs on the processing station. It handles all digitizer operations
BOL	**B**egin **O**f **L**ine
BOS	**B**egin **O**f **S**can
Browser	A program that provides an interface to the World Wide Web, e.g. Netscape Navigator, Microsoft Internet Explorer
Calibration	Algorithm to counterbalance irregularities in the scanner of CR.
CAN bus	**C**ontrol **A**rea **N**etwork bus; communication protocol to interchange data between the connected participants via only one medium – bus system used in the digitizer
CAS	**C**linical **A**pplication **S**pecialist
CCM	**C**onfiguration and **C**ustomization **M**anager: Tool to edit the configuration file *adc.cpf*
Collimation	Determination of the region of the interesting data in the image. On that region the image processing is applied.
CPF – file	**C**ustomization **P**arameter **F**ile; file that contains settings for all parameters that can be modified to configure a CR System according to local needs.
CPU	**C**entral **P**rocessing **U**nit. The computing part of a PC, also known as the “processor” of a PC.
CR	**C**omputed **R**adiography
CU-Filter	Copper plate (chemical symbol: **CU**) used for exposure of a flatfield.
DICOM	**D**igital **I**maging and **Co**mmunications in **M**edicine
Dose, x-ray dose	= kV x mA x sec see also µGy = Micro Gray

Term	Short description
Dosimeter	Device to measure x-ray dose
DR	**D**irect **R**adiography
DRA	**D**irect **R**emote **A**ccess (external product name: AGFATEC LINK)
Dynamic range	Exposure range in which CR can get usable image data.
Fast Scan Direction	Scan direction: This is vertical to the "Slow scan direction" (= Transport direction of Image Plate through the scan unit).
FireWire	A high-speed serial bus that allows for the connection of up to 63 devices. Also known as the IEEE 1394 standard.
FSE	**F**ield **S**ervice **E**ngineer
GenRad	**Gen**eral **Rad**iology
Grid	A grid is used to reduce scattered radiation and to increase sharpness.
GSC	**G**lobal **S**upport **C**enter
GUI	**G**raphical **U**ser **I**nterface
Heel Effect	Inhomogeneous exposure: A consequence of the angle of the target of the tube which results in greater radiation intensities on the cathode side as compared to the anode side of the radiation field.
HIS	**H**ospital **I**nformation **S**ystem
Histogram	Graphical display of the distribution of gray levels
ID – Chip	Chip on the image plate on which the demographic data as well as plate specific information are stored. It can be easily replaced in case of defect.
ID Station	**ID**entification Station
Infocounter	Software tool that collects information about the status of the digitizer (installed SW-version, IP cycles, errors). It is accessible via the CR30-X Service Client
IP	For CR: **I**mage **P**late (phosphor plate)
IP	**I**nternet **P**rotocol: Internet software that divides data into packets for transmission over the Internet. Computers must run IP to communicate across the Internet. See also TCP.

Term	Short description
IP address	(**I**nternet **P**rotocol address) The address of a computer attached to a TCP/IP network.
Jitter	A flicker or fluctuation in a display image. To “jitter a pixel” means to place it off side of its normal placement by some random amount in order to achieve a more natural antialiasing effect.
Laser	**L**ight **A**mplification by **S**timulated **E**mission of **R**adiation
LCD	**L**iquid **C**rystal **D**isplay
LED	**L**ight **E**mitting **D**iode; Semi conductor emitting light.
Leeds Phantom	Image Plate to check the technical image quality of the CR. The Leeds Phantom was developed for Agfa by the University of Leeds.
LUT	**L**ook **U**p **T**able
mR	**m**illi **R**öntgen, measure for x-ray dose 1 mR corresponds to 8.7 μGy
MCBF	**M**ean **C**ycles **B**etween **F**ailure
MTTI	**M**ean **T**ime **T**o **I**nstall
MTTR	**M**ean **T**ime **T**o **R**epair
MUSICA	**Mu**ltiple **S**cale **I**mage **C**ontrast **A**mplification; Agfa’s image processing software
Node	Nodes in the CAN bus system = printed circuit board within the CAN bus.
Pixel	Smallest addressable point to be scanned on the film or plate. A maximum of 2048 per line may be read by the Photomultiplier.
RAM	**R**andom **A**ccess **M**emory Volatile main memory of computers
RIS	**R**adiology **I**nformation **S**ystem
ROI	**R**egion **O**f **I**nterest
ROM	**R**ead **O**nly **M**emory. A memory chip that permanently stores instructions and data. Its contents are created at the time of manufacture and cannot be altered.
RS232 interface	Serial interface which converts computer internal parallel information into serial bits, and vice versa.

Term	Short description
Shading calibration	Sensitivity calibration; calibration of each pixel in a line
Slow-scan direction	Transport direction of Image Plate through the scan unit.
Speed Class (SC)	A measure of the exposure necessary to produce a defined density.
Throughput	A value representing the number of image plates, a digitizer can scan in a certain time frame.
Twain Interface	A programming interface that lets a graphics application activate a scanner, frame grabber or other image-capturing device.
UI	**U**ser **I**nterface; part of a computer program that handles interaction with the user.
UPS	**U**ninterruptible **P**ower **S**upply. Backup power used when the electrical power fails or drops to an unacceptable voltage level.
URL	**U**niform **R**esource **L**ocator. The address that defines the route to a file on the Web or any other Internet facility. URLs are typed into the browser to access Web pages, and URLs are embedded within the pages themselves to provide the hypertext links to other pages.
UTP - cable	**U**nshielded **T**wisted **P**air (Network transfer medium) cable. Cable to connect to a computer network.
W/L	**W**indow and **L**eveling of digital images.

Order no.:
DD+DIS150.06E



CR30-X

Type 5175/100

1st Edition

ReadMeFirst
Service Manual for Download

► Purpose of this Document

This document describes how to

- add the “order list for documentation”.
- print.
- add comments.

► Document History

Edition. Revision	**Release Date**	**Changes compared to previous Version 1.1**
1.2	06-2008	Added how to integrate the order list for documentation in a printed manual. See section 1.

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AGFA HealthCare

1 Integrating the Order List for Documentation

IMPORTANT:

The “order list for documentation” is not part of the service manual for download.

Purpose of the “order list for documentation”:
To verify the latest level and completeness of your Service Manual.

(1) In the MEDNET GSO library select the product of your interest.

(2) Select “Order list and Front page → *PRODUCT* - Chapter 00 - Order List for Documentation”.

(3) Download the “order list for documentation” to your computer.

(4) When creating a paper manual:
Print the order list and put it behind the cover sheet.

2 Printing single Pages, Chapters or the complete Manual

IMPORTANT:

Preferably print this manual double-sided:
This PDF manual contains empty pages at the end of several chapters, to have the next chapter starting with an uneven page number when printed doubles-sided.
If printed one-sided, dispose these empty pages.

Preferably print circuit diagrams on a DIN A3 or ANSI B (Ledger) printer, if available.
Some pages – especially circuit diagrams for equipment – have been created on paper size larger than DIN A4/Letter. Printing these pages on DIN A4/Letter may result in reduced legibility. It is recommended to print these pages separately on a DIN A3 or ANSI B (Ledger) printer.

2.1 Printing single Pages or Chapters

To print single chapters or pages of a chapter proceed as follows:

(1) Click the bookmark of the desired chapter.

(2) Write down or remember the shown PDF page number. See Figure 1.

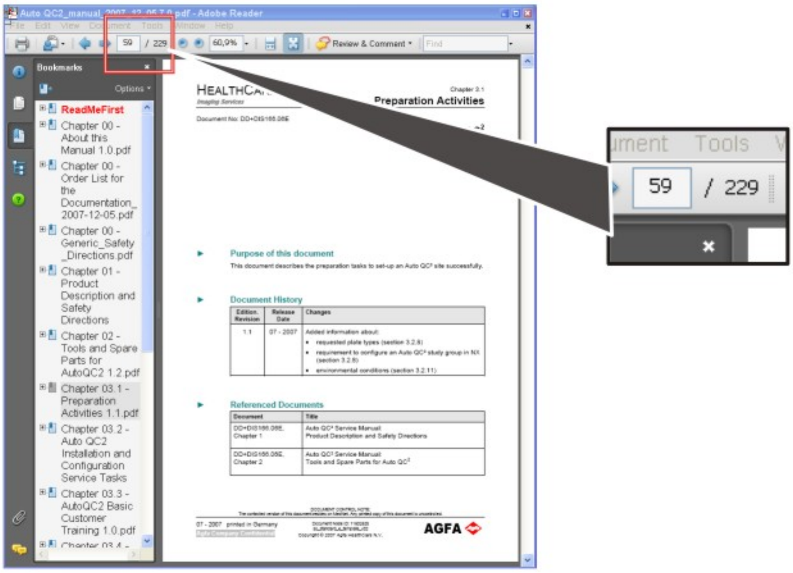


Figure 1: PDF page number in the Adobe reader toolbar

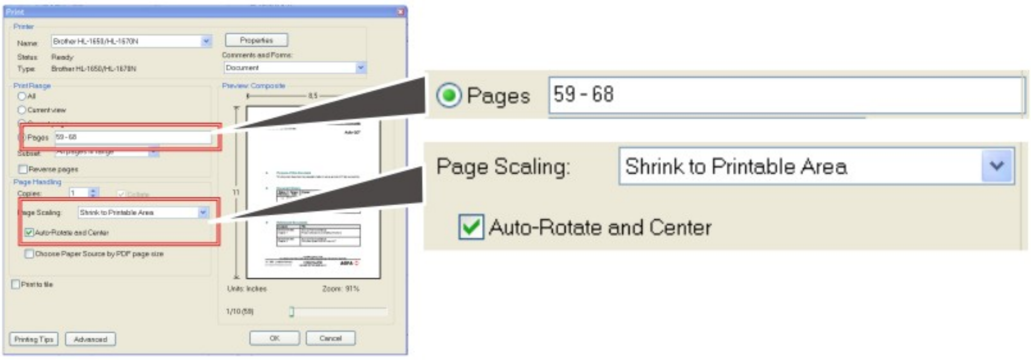
(3) Go the end of the section or desired range of pages.

(4) Select "Print".

(5) Select the page range.

(6) Select "Reduce to printer margins" and "Auto-rotate and Center".

(7) Select “OK”.


● Pages 59 - 68

Page Scaling: Shrink to Printable Area

☑ Auto-Rotate and Center

Figure 2: Print dialogue for printing single pages or chapters

NOTE:

“Shrink to printable area” may be named on other Adobe Reader versions “reduce to printer margins” or “shrink oversized pages to paper size”.

2.2 Printing the complete Service Manual

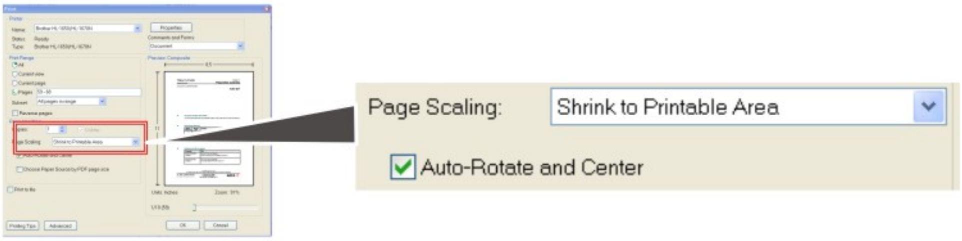
To print the complete service manual proceed as follows:

(1) Select "Print".

(2) Select “All”.

(3) Select "shrink to printable area" and "Auto-rotate and Center" (see NOTE above).

(4) Select “OK”.



Page Scaling: Shrink to Printable Area

☑ Auto-Rotate and Center

Figure 3: Print dialogue for printing the complete manual

3 Adding Comments

- If you open this file in an Adobe Reader version ≥ 7, the comment toolbar will show-up.
- This allows adding comments, to highlight or underline text and many more text manipulations.

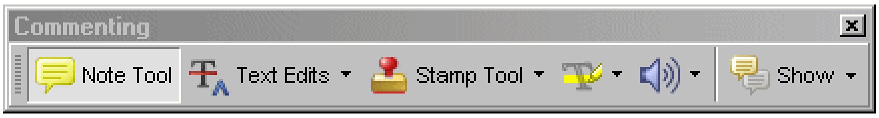


Figure 4: Adobe Reader comments toolbar

3.1 Exporting your Comments

NOTE:

Exporting your comments allows importing them again in a next version of the manual.

(1) In the drop down menu “Comment & Markup” select "Show comments List".

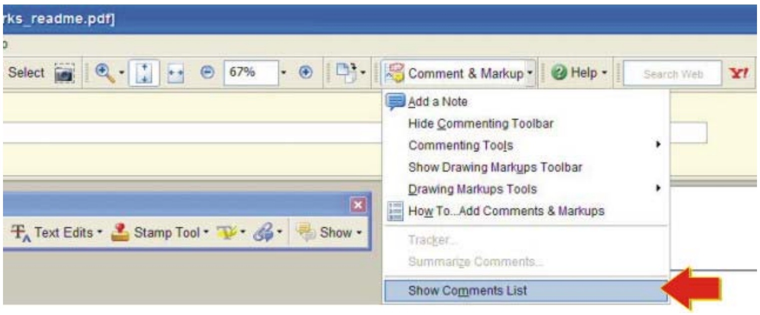

rks_readme.pdf]
Select
67%
Comment & Markup
Help
Search Web
Add a Note
Hide Commenting Toolbar
Commenting Tools
Show Drawing Markups Toolbar
Drawing Markups Tools
How To...Add Comments & Markups
Tracker...
Summarize Comments...
Show Comments List
Text Edits
Stamp Tool
Show

Figure 5: Drop down menu “Comment & Markup”

(2) Select the desired comments: Press the CTRL-key for multiple selections.
(3) Select “Options - Export Selected Comments”.
(4) Save the file with any name.

3.2 Importing Comments

(1) In the drop down menu “Comment & Markup” select "Show comments List".
(2) Select “Options - Import Comments”.
(3) Browse for the comments file and press “select”.

NOTE:

The imported comments possibly appear on different pages, if the file where the comments have been imported has a different number of pages.